

CC  
02648

DECEMBER 1979

\$1.25

UK 70p

# Isaac Asimov's



**SCIENCE  
FICTION**  
MAGAZINE

**FREDERIK  
POHL**

**GENE  
WOLFE**

**JACK C.  
HALDEMAN II**



12

71486 02648

A small logo consisting of a stylized 'D' inside a circle, followed by the text 'A DAVIS PUBLICATION'.

Asimov

# Asimov's™ SF Adventure Magazine

FALL 1979 \$1.95

THE  
BEST  
IN  
SCIENCE  
FICTION

**"Hellhole"**  
by David  
Gerrold

**Barry B.  
Longyear**

**John  
Brunner**

**Frederick  
Longbeard**



EXTRA  
COUPON  
ON PAGES 82 OR 98

The Fall 1979 Edition  
—In it, among other exciting  
things, you'll enjoy "The Things That  
Are Gods," (a tale of the Traveller in  
Black) by John Brunner; "Hellhole,"  
by David Gerrold; "The Starshow," by  
Barry B. Longyear; and "The Jaren,"  
by Frederick Longbeard.

IT'S SO  
NEW—  
WE'RE  
ONLY ON  
OUR 4TH  
ISSUE!

And when it's  
by Isaac Asimov  
it's just got to  
be lots of  
SF adventure  
and fun.



IASFM129

☐ Enclosed is \$1.95 plus 45¢ handling/shipping  
(total of \$2.40) for the Fall '79 issue (#4) of  
**ASIMOV'S SF ADVENTURE Magazine.**

Name \_\_\_\_\_ please print

Address \_\_\_\_\_ Apt. No. \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_

# THE ULTIMATE



## IN ADVENTURE GAMES --

AVAILABLE WHEREVER BETTER GAMES ARE SOLD



TSR Hobbies, Inc.  
The Game Wizards

POB 756  
Lake Geneva, WI 53147  
414-248-3625

# Isaac Asimov's

SCIENCE  
FICTION  
MAGAZINE

Next issue on Sale  
20 December 1979

POSTMASTER:  
send form 3579 to IAsim,  
Box 1855 GPO, New York, NY 10001

ISSN 0162-2188  
Vol. 3, No. 12 (whole no. 22) December 1979

COVER .....	Alex Schomburg	1
EDITORIAL: REJECTION SLIPS .....	Isaac Asimov	6
ON BOOKS .....	Baird Searles	10
THE SF CONVENTIONAL CALENDAR .....	Erwin S. Strauss	19
Written in Sand .....	Robert Chilson	20
How Crock and Watkins Cracked a Code .....	Martin Gardner	36
ON HOW SCIENCE HAPPENS: THE VOYAGER I		
DISCOVERIES .....	Susan J. Kovach	37
The Web Dancer .....	Somtow Sucharitkul	56
Horse Laugh .....	Pierce Askegren	83
ON SCIENCE FICTION CLUBS .....	Darrell Schweitzer	84
The Cow in the Cellar .....	Bill Earls	93
Hear the Crash, Hear the Roar .....	Jack C. Haldeman II	99
The Woman Who Loved the Centaur Pholus .....	Gene Wolfe	108
Through Time & Space With Ferdinand		
Feghoot V! .....	Grendel Briarton	119
Like Unto the Locust, Part I .....	Frederik Pohl	120
LETTERS .....		172

Joel Davis: President & Publisher

Isaac Asimov: Editorial Director

George H. Scithers: Editor

Published monthly by Davis Publications, Inc., at \$1.25 a copy; annual subscription of twelve issues \$15.00 in the United States and U.S. possessions; in all other countries \$17.00. Address for subscriptions and all correspondence about them: Box 7350, Greenwich, CT 06830. Box 1855 GPO, New York, 10001. Address for all editorial matters: Box 13116, Philadelphia, PA 19101. Isaac Asimov's Science Fiction Magazine® is the registered trademark of Davis Publications, Inc. © 1979 by Davis Publications, Inc., 380 Lexington Ave., New York, NY 10017. All rights reserved, printed in the U.S.A. Protection secured under the Universal and Pan American Copyright Conventions. Reproduction or use of editorial or pictorial content in any manner without express permission is prohibited. All submissions must include a self-addressed, stamped envelope; the publisher assumes no responsibility for unsolicited manuscripts. Second-class postage paid at New York, NY, and additional offices.



INTRODUCING FRANK HERBERT'S

# Game of DUNE



Frank Herbert's classic science fiction novel *Dune* will live for generations as a masterpiece of creative imagination. In this game you can bring to life the forbidding alien planet and the swirling intrigues of all the book's major characters.

A desert planet—DUNE—practically uninhabitable is crucial to the destiny of the galactic empire. Because only on Dune can *spice* be harvested.

Spice is the key to interstellar travel. Only by ingesting the addictive drug can the Guild Steersman continue to experience visions of the future, enabling them to plot a safe path through hyperspace. Spice is also a geriatric medicine which prolongs life. Only by assuring a stable supply of it throughout the galaxy can any Emperor avoid civil revolt. With spice, in short, one can buy whatever he wants.

Powerful forces struggle for control of Dune. Imperial troops, aristocratic families, Guildsmen, a secret sisterhood and the nomadic native Fremen all vie for power on the planet.

In the game as in the novel massive battles will occur. Often to be decided by a single brilliant leader or an act of low treachery!

## YOU CAN BE ONE OF THESE CHARACTERS:

- The youthful Paul Atreides (Muad 'Dib)—rightful heir to the planet, gifted with valiant lieutenants and a strange partial awareness of the future, but beset by more powerful and treacherous opponents.
- The decadent Baron Vladimir Harkonnen—master of treachery and cruel deeds.
- His majesty the Padishah Emperor Shaddam IV—keen and efficient, yet easily lulled into complacency by his own trappings of power.
- Guild Steersman Edric (in league with smuggler bands)—monopolist of transport, yet addicted to ever increasing spice flows.
- Fremen ecologist Leit-Kynes—commanding fierce hordes of natives, adept at life and travel on the planet, and dedicated to preventing any outside control while bringing about Dune's own natural regeneration.
- Gaius Helen Mohian, Reverend Mother of the Bene Gesserit sisterhood—ancient and inscrutable, carefully trained in psychological control and a genius at achieving her ends through the efforts of others.

## FOR 2 TO 6 PLAYERS

In the DUNE game you can explore many of the possible interactions which might have taken place among these fascinating characters with their own drives, needs and special advantages.

Send for DUNE, an outstanding new game with top quality full-color components aficionados have come to expect from Avalon Hill, world's largest publisher of strategy board games.

## ORDER 2 GAMES—GET MAGAZINE SUBSCRIPTION FREE

DUNE is just the newest in a growing line of Avalon Hill SF/fantasy board games. Our first was #1 in sales in 1977—Starship Troopers by Robert Heinlein. We've recently added Magic Realm and Wizard's Quest, both appealing to the dragon and dungeon fantasy genre so popular today. A purchase of any two games earns you a **FREE** 1-year subscription (or extension of current sub) to *The General*, our bi-monthly full color glossy magazine that is to gaming what Chess Review is to Chess.

**The Avalon Hill Game Co., Dept AZ-1.**

4517 Harford Road, Baltimore, MD 21214

I enclose proper amount plus 10% handling for:

\_\_\_\_\_ DUNE @ \$15 \_\_\_\_\_ Starship Troopers @ \$12

\_\_\_\_\_ Magic Realm @ \$15 \_\_\_\_\_ Game Catalog @ 50¢

\_\_\_\_\_ Wizard's Quest @ \$12

☐ I'm ordering more than one game. Be sure I get the **FREE** magazine subscription.

☐ Check or money order to **The Avalon Hill Game Co.**

☐ Bill to \_\_\_\_\_ Amexco \_\_\_\_\_ VISA \_\_\_\_\_ Master Charge

Account No. \_\_\_\_\_

Exp. Date \_\_\_\_\_ Signature \_\_\_\_\_

NAME \_\_\_\_\_

ADDRESS \_\_\_\_\_

APT \_\_\_\_\_

CITY \_\_\_\_\_

STATE \_\_\_\_\_

ZIP \_\_\_\_\_

DATE OF THIS ORDER \_\_\_\_\_

# EDITORIAL: REJECTION SLIPS

By Isaac Asimov

art: Frank Kelly Freas

Virtually all writers get rejection slips; some only occasionally and some frequently. A number of writers, alas, get nothing but rejection slips even after they have been at it for years.

Usually, writers receive such slips with emotions that range from sorrow through disappointment to frustration. I can't blame them, and I don't. I experience the same emotions myself on such occasions.

Sometimes, though, these emotions explode into anger and bitterness and are expressed as such in the furious letters we receive.

It occurs to me therefore that I ought to write on the subject. It is not a particularly pleasant one, but we cultivate a very informal atmosphere in this magazine, and I feel that I can talk to you about anything at all.

Let's try some questions and answers, therefore:

1) *Why must there be rejections?*

Suppose we have room for ten stories each month, and suppose we get a thousand submissions each month. Clearly, nine hundred ninety of these submissions must be returned to the submitter. We get no pleasure out of that, but we can't help it. It is with the sure knowledge of this ineluctable fact of publishing life that we ask that all unsolicited manuscripts be accompanied by a stamped, self-addressed envelope large enough to hold that manuscript comfortably. The cruel situation is that the odds on rejection are uncomfortably great.

2) *Which stories get rejected?*

If we can only print a small percentage of what we get, then we must accept the small percentage that is highest in quality and reject everything else. Again, we have no choice.

3) *Ah, but the level of quality is a subjective matter and no two people would agree on which stories are the best. So who decides?*

The answer is easy. The editor decides; and in the case of this magazine, the editor is George Scithers. Where the question of ac-



ceptance or rejection is concerned, the editor (George Scithers, still) is an absolute monarch. He is the law, and from his ukase there is no appeal.

There are others who work with George, notably Shawna. Their opinions are requested and are valued and may sway George, but in the end George makes the decision. When George is more than usually doubtful he may send me the manuscript for my opinion and I will then express my feelings with varying degrees of vehemence, either for or against; and again George may be swayed, but again he makes the final decision. Joel, our esteemed publisher, reads as many manuscripts as he can find time to; and he, too, is free to express an opinion (and does so) and George will listen—and then make his own decision.

4) *Why this absolutism? Why George?*

Because George bears the responsibility as well. If the magazine does well and meets the approval of the readers, it is George who wins the Hugo; not I, not Joel, not Shawna. If the magazine does poorly and if the readers should begin to depart, Heaven forbid, it is George who is likely to be replaced.

Under these circumstances, George must have a free hand. To attempt to subvert his decisions by fiat (as opposed to discussion, argument, and reasoning) would destroy his usefulness at once.

5) *But why are some stories held so long before a decision is made? Is George lazy, by any chance?*

A more conscientious, harder-working man simply doesn't exist. George is not lazy. He makes every attempt to reach a decision as quickly as possible either way; and, on the whole, he succeeds. After all, some stories are so good, or fall so far short of requirements, that virtually on the instant of reading a decision to accept or reject can be made.

Some stories, however, are (inevitably) borderline. There may be virtues and shortcomings in such balance that no clear certainty can be reached as to which overrides. It may seem, too, that a revision might save a story, or make a fairly good story into a very good one; but there may be some question as to the nature or extent of revision that ought to be requested. For these, and for other reasons, too, there can be an extended period of agonized soul-searching, as unpleasant for the editor as for the writer.

6) *Why should there be a soulless rejection slip—a curt printed form—a list of items of which one or two are casually checked off? Granted that rejections are necessary, is this a way to treat a writer, even a beginner? And of what use is such a slip in educating and*

*developing that beginner?*

Quite right. Rejection slips, or form letters, however tactfully phrased, are lacerations of the soul, if not quite inventions of the devil—but there is no way around them.

It would be best for everyone, including George, if somehow every rejection could be accompanied by a thorough analysis of the story, pointing out defects and ways of correcting them. If, in this way, a hundred beginners could be force-fed into expertise each year—what a magazine we would have!

Unfortunately, there is no way of doing this. There are not years enough in the day; and George could not survive two weeks of it, even though he is a jovial and rugged soul. In order to leave time for all the other, manifold editorial duties and even for such trivia as eating and sleeping, George must dispose of some manuscripts briefly—and naturally does so in the case of those for which an existing, printed rejection slip seems to closely fit the story's problems.

In all borderline cases, and reasonably near misses, however, George does make the effort to write about the story as thoroughly as he can reasonably be expected to; and many burgeoning writers have testified to that with gratitude.

7) *Sometimes George encloses directions on "How to Write." Isn't that insulting especially if the writer is not exactly a beginner?*

Well, there are times when its inclusion would not be appropriate. If a topflight professional were sent such directions, George might very well get a letter in return that might frizzle him about the edges a bit.

Except in obvious cases, however, such directions are useful even to writers who have already made sales. Remember that different editors have different tastes and different needs. George is not so much interested in teaching you How to Write on some vast objective scale as in teaching you How to Write in such a way as to meet his tastes and needs.

8) *How should you react to a rejection?*

I personally kick and scream; and there isn't any reason why you shouldn't either, if it makes you feel better. However, once you are quite done with the kicking and screaming, sit down and reread the story in the light of anything George may have told you, and see if you can find out what's wrong, how to correct that wrong, and how to avoid that wrong in the future. If the rejection teaches you something, you may in the long run have gained more from it than from a too-easy acceptance of a flawed story.



9) *How should you not react to a rejection?*

a) Don't stay mad and decide you are the victim of incompetence and stupidity. If you do, you'll learn nothing and you'll never become a writer.

b) Don't try appealing, say, over George's head to me. I will under no circumstances read a manuscript George has rejected.

c) Don't get huffy because you have already made sales and therefore feel that no editor dare reject you. That's just not so. He *can* reject you and he need not even offer any reason. I've made nearly two thousand sales of all kinds; and I still get rejections now and then, and some pretty off-handed ones at times, too. Indeed, George himself has rejected two of my stories. (He says *only one* but it was *two*.)

d) Don't make the opposite mistake and decide the story is worthless. Editors differ and so do tastes and do do magazines' needs. Try the story somewhere else. Some of the stories we publish have been rejected by other magazines and some of our rejects are published elsewhere. Why not? What doesn't fit one magazine might easily fit another.

Finally, please remember George Scithers's Golden Rule of Rejection: "We don't reject writers; we reject pieces of paper with typing on them." So just sit down and produce *other* pieces of paper with typing on them and we'll be glad to see them.

---

While we are always looking for new writers, please, before you send in a story, send us a stamped envelope, addressed to yourself, about 9½ inches long (what stationery stores call a number 10 envelope). In it we will send you a description of our story needs and a discussion of manuscript format. The address for this and for all manuscript submissions is Box 13116, Philadelphia, PA 19101. We assume no responsibility for unsolicited manuscripts.

---

Joel Davis: President & Publisher

Isaac Asimov: Editorial Director

George H. Scithers: Editor

Shawna McCarthy: Associate Editor

Meg Phillips, Darrell Schweitzer, Lee Weinstein, Alan Lankin: Asst. Eds.

Victor C. Stabile: Vice Pres. & Treas.

Leonard F. Pinto: Vice Pres. & General Mgr.

Robert B. Enlow: Sub. Cir. & Mktg. Dir.

Don L. Gabree: Newsstand Cir. Dir.

Jim Cappello: Advertising Mgr.

Constance DiRienzo: Rights & Permissions Mgr.

Eugene S. Slawson: Sub. Cir. Mgr.

Irving Bernstein: Art Dir.

Carl Bartee: Prod. Dir.

# ON BOOKS

## by Baird Searles

---

*The Masters of Solitude* by Marvin Kaye and Parke Godwin, Avon, \$2.50 (paper).

*Beauty* by Robin McKinley, Pocket Books, \$1.95 (paper)

*Tin Woodman* by David F. Bischoff and Dennis R. Bailey, Doubleday, \$7.95

*Strange Evil* by Jane Gaskell, Pocket Books, \$1.95 (paper)

*King's Daughter* by Jane Gaskell, Pocket Books, \$1.95 (paper)

*Judgement Night* by C. L. Moore, Dell, \$2.25 (paper)

Somehow the last thing in the world I wanted at this point was yet another book set in a primitive, post-holocaust future, and having as one of its main themes telepathy; I'm getting to a point where I feel both matters should be given a long rest in science fiction. Without making a Ph.D. thesis out of it, they are natural extensions of the '60s cultural revolution with its tendency to mysticism and its anti-science, anti-technological biases, coming about the time most of the new younger writers were forming their personal views on our culture.

Nonetheless, any theme, no matter how overused, can be freshened by individual and intelligent handling, and while individual may be the wrong word to use of a novel with two authors, *The Masters of Solitude* by Marvin Kaye and Parke Godwin does indeed make post-holocaust primitivism and telepathy valid ingredients in their epic stew.

I use the word epic with some reservations; *The Masters of Solitude* is less an epic in the genre sense (such as *The Lord of the Rings*), so much as it is epic in the way an historical novel might be. There is a multiplicity of events and characters, though the space covered is confined mostly to what is now the state of Pennsylvania and the time is but a few years with one lengthy flashback.

The world of the coveners is agricultural. They are divided into tribes, with a social structure akin to that of the American Indian. Their religion is witchcraft, but it is a witchcraft very like the pre-Christian pagan worship we have learned about from Graves, Mitchison, and Renault, a religion close to the earth and the seasons with many festivals and rites associated with those festivals.

Other cultures in this world are the Kriss, remnants of a hard-

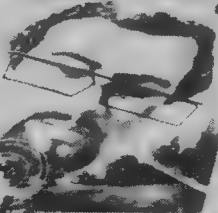
# New Dell SF & Fantasy— By 4 of the Greatest Stars!

## **WHEELS WITHIN WHEELS**

**F. PAUL WILSON**



## **PHILIP K. DICK** *Time Out of Joint*



## **WALL OF SERPENTS**

**L. SPRAGUE DE CAMP AND FLETCHER PRATT**



## **WHEELS WITHIN WHEELS**

by F. Paul Wilson

Author of *Healer*

A bizarre murder and a monstrous conspiracy are linked in this suspenseful science fiction thriller! A new LaNague Federation novel.  
\$2.25

## **TIME OUT OF JOINT**

by Philip K. Dick

Author of *The Man in the High Castle* and *The Zap Gun*

A great novel of paranoid delusion and government deception which builds to a chilling climax. From the Hugo Award-winning author.  
\$2.25

## **WALL OF SERPENTS**

by L. Sprague de Camp  
and Fletcher Pratt

Co-authors of *The Compleat Enchanter* and *Land of Unreason*

First time in paperback—the continuing adventures of the ever-popular Harold Shea!  
\$1.95

Publishing the best of the new  
writers and the established stars.



core, fundamentalist Christianity to the west; the Wengens of the north, who are black but who have a culture related to that of the coveners; and the City, which stretches for a hundred miles along the seacoast to the east. The inhabitants of the City are knowledge seekers, and it is to this that they devote their incredibly long lives, aided by the computers that only they know how to use. The City dwellers lack the *lep*, the communication between minds which is a talent of the coveners.

This cultural stasis has been maintained for over a thousand years. But a woman in search of knowledge and the Girdle of Solitude, a legendary weapon from the old times, comes out of the City; and it is her son and his half brother who break the stasis.

As you can see, none of this is exactly new material, but it's revitalized by the detailed conviction of the background which still doesn't slow down the pell-mell plot. Perhaps the most memorable aspect of the novel is its myriad characters, all of whom are finely and distinctively drawn. The world of *The Masters of Solitude* is well-peopled indeed.

This seems to have been a month for things I didn't need. Having just seen Jean Cocteau's film *Beauty and the Beast* for the 20th or 30th time, and considering it, as I do, a top candidate for the greatest cinematic fantasy ever, I felt I did not need a novelization of the old fairy tale, no matter how well done. Wrong again.

Robin McKinley's *Beauty* is a wonderful book. I had pretty much dismissed the idea of reading or reviewing it, but casually picked it out of the "to-be-considered-for-review" box that lives by my typewriter, read the first paragraph and was immediately captured. There aren't many books that can do this.

It is indeed the retelling of the old tale by Marie Leprince de Beaumont whose roots go as far back as the story of Eros and Psyche. McKinley has filled it in with realistic events and valid motivations that make it a full-fledged fantasy novel without distorting the basic fabric of the classic plot except in a few minor details.

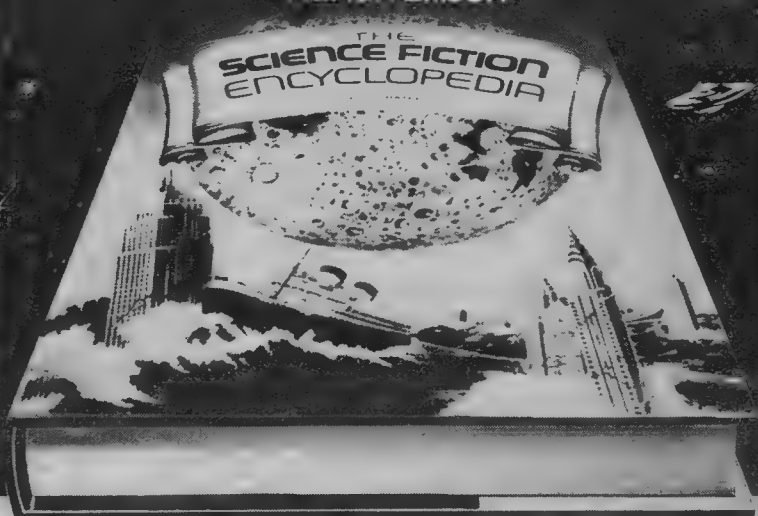
One of these is that *Beauty's* two sisters are not the disdainful harridans that we knew and hated, but two very nice girls who are just not quite so bright or perceptive as they might be. In fact, all of the cast of characters are very likeable, up to and especially including the Beast himself. That McKinley carries this off without reducing the whole thing to saccharine is a minor miracle.

It is *Beauty*, though, that is the prime creation (the story is told by her in the first person). She is bright, well-read, and has an



# "The indispensable SF reference work!"

—Harlan Ellison



"Will become the bible for all sf fans," says ISAAC ASIMOV; "by far the most inclusive history of sf so far," says PHILIP JOSE FARMER; "the most valuable sf source book ever written," says FRANK HERBERT.

The biggest names in science fiction acclaim the biggest sf reference book ever published—a complete A to Z encyclopedia with over 2,800 entries covering authors, themes, films, magazines, illustrators, editors, critics, film-makers, publishers, pseudonyms, series, tv programs, original anthologies, comics, sf in various countries, terminology, awards and fan-zines, conventions, and more. With over 700,000 words of text and hundreds of illustrations,

"no serious fan can afford to be without it!"—Norman Spinrad.

At bookstores or mail coupon today.

DOUBLEDAY & COMPANY, INC.  
Dept. ZA-950  
Garden City, New York 11530

Please send me copies of THE SCIENCE FICTION ENCYCLOPEDIA as follows:

\_\_\_\_\_ copies @ \$24.95 hardcover;  
\_\_\_\_\_ copies @ \$12.95 paperback.

Enclosed is my check or money order. I understand you will pay all shipping and handling costs. If I don't agree that this is a book I must keep, I'll return it within two weeks for a full prompt refund.

Name \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_

State \_\_\_\_\_ Zip \_\_\_\_\_

Offer expires December 31, 1980.

amusing air of cynicism about the many magical wonders of the Beast's enormous castle. She notes that there is "a dining hall, big enough to be two ballrooms [with] a many-legged rectangular table that might take half an hour to walk around, but only ten minutes to walk across." What wins her around to loving the Beast is probably his library as much as anything else; it contains copies of books that are yet to be written and she revels in discovering Browning, Doyle, and C. S. Lewis (" 'Rudyard Kipling,' I said in despair. 'This is a name?' "); and she reads *The Once and Future King* twice, though she says she likes Malory better.

I don't think I'll be spoiling anything by revealing that all these nice people live happily ever after. And the reader, for once, is just as happy at the end as the characters.

And yet *another* science fiction novel with telepathy as a main ingredient. In *Tin Woodman*, co-authored by David F. Bischoff and Dennis R. Bailey (minor digressional question—why are SF authors so addicted to middle initials?), the telepathic minority of space-going humanity is looked down on as a threat. They are uneasily integrated into the society as unneeded "mental health guardians" on interstellar vessels, or they are "Doped," which eliminates their telepathic talent as well as doing irreparable harm to the personality.

The major character in *Tin Woodman* is Mora Elbrun, an Empathic Talent. The vessel on which she serves encounters an alien—a huge, sentient spaceship which is half organic, half machine—the "Tin Woodman" of the title. It abducts the telepathic adolescent boy sent out to communicate with it (willingly on the boy's part; as it turns out); and the megalomaniac ship's captain, already well around the bend, takes off into Null-R space after it like some Space Academy graduate Captain Ahab after a Moby Cyborg.

It gets pretty exciting, what with attempts to Dope Mora, hairbreadth escapes, and attempted mutinies. However, given the relative shortness of the novel, it takes a little too long to get to the action; an ongoing problem for science fiction writers seems to be that of setting up a complex future and keeping the plot going at the same time. A good try is made here, but it doesn't quite work. Neither does the ending, which attempts a sort of cosmic emotion a la 2001. For me, I'm afraid, it had all the sentimentality of a two-ton heart-shaped box of chocolates.

Readers will know from my ecstasies of a few months ago that

I'm more than a little fond of the writings of Jane Gaskell. Two early books of hers have been released that I had not read before, and at the risk of becoming tedious on the subject of Ms. Gaskell, I think they both deserve notice.

*Strange Evil* is, in fact, more than an early work; the author was an astonishing fourteen years old when it was written. Child prodigies are not entirely unknown in literature, but I can think of no one in science fiction or fantasy to be published at this tender an age. Perhaps one needs a certain sophistication to distort reality in those ways.

Gaskell certainly had it. *Strange Evil* is the story of a trip to Fairyland, but don't get the wrong idea. *This* Fairyland would turn Peter Pan's hair gray. You reach it by stepping off the highest of Notre Dame's turrets into thin air. It is inhabited by satyrs, incorporeal "Watchers" who are sort of spiritual vampires, and lascivious and debauched fairy lords and ladies who are carrying on a vicious war with the natural beings who live on the outside of the fairy's mountain.

It's easy enough to say that the novel is an incredible piece of work for a fourteen-year-old. What *is* incredible is that it would be interesting even if you didn't know the age of the author, despite some awkwardnesses in the writing and naïveté in concept.

One particularly outre aspect of *Strange Evil* is that the mysterious stranger who turns out to be a *good* fairy lord and the deserved object of the heroine-visitor's affections is named Enaj. That is, of course, Jane spelled backward.

*King's Daughter* was written when Gaskell had reached the ripe old age of sixteen; it has even fewer indications of the writer's youth than the earlier work and is something of a preliminary sketch for her great Atlan series. In fact, Atlan figures at a distance in *King's Daughter*, and it is set in that same age between the time that Earth's first moon has fallen and the wandering small planet that is our present satellite had not yet been captured by Earth's gravity.

And, like that later series, the story is that of the picaresque adventures of a runaway princess. Bulinga may not be quite as feisty, quirky, and infuriatingly lovable as Princess Cija; but she comes close, and her adventures are nearly as diverting. They range from being impressed into service as a temple virgin and quite innocently causing a riot during services that ends in half the town being burned, to travelling with a rather charming tribe of nomad cannibals and not ever being quite sure as to whether she was going to be the evening meal.

The hero of this one, incidentally, is named Emalf, which is not so significant spelled backward. And one clear difference from the Atlan books is that *King's Daughter* comes to a definite end; a finale so startling, in fact, that one simply says "You don't end this kind of book that way!"

But Jane Gaskell does.

And speaking of princesses and endings, C. L. Moore's *Judgement Night*, at last in print again, has a dilly of each. Moore was one of the bare handful of female science fiction writers during the "golden age" of SF, and like the others, brought something fresh and unique to the field. When *The Best of C. L. Moore* was published some years back, containing stories I had not read for 30 years, I suddenly relived the excitement of that period. Each story was a new concept, an adventure in taking an idea and making a story around it; and even those that failed were admirable in their daring.

I hadn't read *Judgement Night* for a generation either; but somewhere lurking in the back of my mind, I knew that there was an ultimate Galactic Empire story, one that epitomized that ultra-romantic sort of super space-opera, and one that had the pleasure planet of all pleasure planets to boot. Rereading *Judgement Night*, I knew this was it.

It is a Galactic Empire that the Lyonese Dynasty has ruled from the planet Ericon for thousands of years. And their rule was built on other dynasties that stretched back through the ages. The princess is Juille, daughter of the emperor, an Amazon warrior destined to inherit the throne. The pleasure planet is Cyrille, a satellite of Ericon, where any surrounding, any milieu, can be had if one can pay for it.

On the eve of war with the H'vani, a human barbarian culture that is threatening to invade the Empire, Juille, for her own reasons, goes to Cyrille. There, she meets a magnetically attractive young man with whom she enjoys the pleasures of Cyrille (and Moore's imaginative evocation of what Cyrille has to offer is breathtaking), but resists falling in love with him due to her position and her own sexual unsureness. (If you think this is one more macho-man-subdues-the-Amazon number, forget it. Moore was doing some pretty sophisticated anticipation of the liberated female here.)

The complex tale of intrigue and counter-intrigue that follows is a nonstop knockout. There are frightful new weapons, and forgotten old ones, buried with the ages below the Emperor's palace. There are the Andareans, the remnant of the race that ruled from Ericon



before the Lyonese, and the *llar*, the indigenous animals that are pets—or are they? And hovering over all, the Ancient Gods of the planet, who supposedly guide the destiny of the Galaxy, but who are never seen or heard, and who destroy all who venture into their forbidden areas of Ericon.

And should I even mention the thundering climax, played through the many atmospheres of Cyrille? Better not—no one would believe me.

Despite the fact that I'd read it before, and despite the fact that it was written an incredible 35 years ago, *Judgement Night* kept handing me surprises, not the least of which is that ending. In fact, it has everything that made SF so exciting during the '30s and '40s—and more, as it were. Like her coequal talent of the time, Leigh Brackett, Moore brought an eye for the sensuous and, yes, even the sexual (in an oblique way due to the Puritan morality of the pulps, despite their covers), that was absolutely foreign to the male majority of writers of the time.

Yes, indeed, it's good to have *Judgement Night* back again. And it should be mentioned that this edition offers, as lagniappe, four other Moore stories, all as good.

**People  
of all ages die of  
heart disease  
and stroke.**



**American  
Heart  
Association**

**WE'RE FIGHTING FOR YOUR LIFE**

**14 classic SF films  
of all time—  
yours to enjoy anytime!**

## **SCIENCE FICTION GOLD**



**By DENNIS SALEH.**

Instant reruns of the original *Invasion of the Body Snatchers* and 13 more science fiction greats—each with a lavish photo essay, commentary, complete credits. 8½" x 11". 84 photos. \$7.95 at bookstores, or direct from the publisher.

 **A Comma Book**

Published by  
**McGraw-Hill Paperbacks**  
1221 Ave. of the Americas, N.Y. 10020



The rate per word for Classified Ads is \$1.00 each insertion, minimum ad \$15.00—payable in advance. Capitalized words 40¢ per word additional. Space reservations close 1st of 3rd month preceding COVER date. Send order & remittance to R. S. Wayner, Classified Ad Manager, DAVIS PUBLICATIONS, INC., 380 Lexington Ave., New York, N.Y. 10017.

### DISTRICT OF COLUMBIA

MOONSTONE BOOKCELLARS, INC., 2145 Pennsylvania Ave. N.W., WASHINGTON. 202-659-2600. Open seven days 11AM-6PM.

### ENGLAND

ANDROMEDA BOOKSHOP, 57 Summer Row, BIRMINGHAM B31JJ. 10 AM till 6 PM. Phone (021) 236-1112 (Mailorder Service).

J. WELLINGTON WELLS, 70 St. Mary's Axe, LONDON. Daily, 6-11 pm.

"DARK THEY WERE AND GOLDEN-EYED." 9-12 St. Anne's Court, LONDON. 01-734-4260. Open Mon-Sat. The Largest Science Fiction Bookstore in the World.

### MICHIGAN

CURIOUS BOOK SHOP, 307 E. Grand River, E. LANSING. Midwest's Largest SF Selection! (517) 332-0112.

### MINNESOTA

J & J O'DONOGHUE BOOKS, 1927 2nd Ave., South, ANOKA. Mon-Sat 10:00-5:30, Fri till 8:00. 427-4320. Used & Rare.

### NEW YORK

FANTASY ARCHIVES, 71 8th Avenue, NEW YORK. Uncommon books. By appointment only. #929-5391.

### WASHINGTON

MAGAZINE CITY, 1315 Third Avenue, SEATTLE. 624-6084.

MOVING? For your subscription to *IA'sf* to keep up with you, send both your old address and your new one (and the ZIP codes for both, please!) to our subscription department: Box 7350, Greenwich, CT 06830.

## The Darkover Concordance

A Readers' Guide (illustrated)

by Walter Breen

Paperback \$8.95 / Hardback \$17.95 from—

PENNYFARTHING PRESS

2000 Center St., #1226-1A, Berkeley, CA 94704

Write for our complete catalog/dealer discounts available.



# THE SF CONVENTIONAL CALENDAR

by Erwin S. Strauss

---

The frequency of SF con(vention)s drops off at this time of year, so don't pass up any chance to have a social weekend with your favorite authors, editors, artists—and fellow SF fans. When writing, enclose an addressed, stamped envelope (SASE). If you're planning to put on a con, there's no charge for listing here. If you can't reach a con, call me at (703) 273-6111. State your number **CLEARLY** to the answering machine, and I'll call you back. For a longer, later list—and a sample of SF folksongs—send me an SASE at 9850 Fairfax Square #232, Fairfax VA 22031. Look for me at cons as “Filthy Pierre,” making music.

**Future Party.** For info, write: c/o Bunt, Highland Hills 606, E. Greenbush NY 12601. Or phone: (518) 477-4320 (10 A.M. to 10 P.M. only, not collect). Con will be held in: Albany NY (if location omitted, same as in address) on 22-25 Nov., 1979. Asimov, Clement, Sturgeon, Lichtenberg. A four-day science fact/fiction marathon at the Turf Inn.

**NutriaCon,** (504) 283-4833. New Orleans LA, 30 Nov.-2 Dec., 1979. Karl Edward Wagner, Wilson Arthur (Bob) Tucker, and George Alec Effinger. 'Round-the-clock party room.

**ChattaCon,** Box 21173, Chattanooga TN 37421. 4-6 Jan., 1980. Hal Clement, Joan Vinge, Wilson A. (Bob) Tucker (who'll be “roasted”). “The first SF con of the 1980's.”

**HexaCon,** c/o Newrock, Box 270-A, R. D. 2, Flemington NJ 08822. Lancaster PA, 11-13 Jan.

**FortCon,** c/o Anti-Martian Society, Student Center Box 407, Colo. St. U., Ft. Collins CO 80523. 8-10 Feb. Fred (Berserker) Saberhagen, Ed Bryant. I've seen stories shorter than that address.

**WisCon,** c/o SF3, Box 1624, Madison WI 53701. (608) 233-0326. 7-9 March. Octavia Butler, Joan Vinge, David Hartwell, Bev DeWeese. The leading feminist-oriented SF convention.

**HalCon,** c/o HalCon SF Society, Box 3174 South, Halifax, Nova Scotia B3J 3H5, Canada. 7-9 March. A. E. (Slan, Weapon Shops, Null-A) Van Vogt, Alfred (Demolished Man) Bester.

**UpperSouthClave,** Box 8423, Louisville KY 40208. Bowling Green KY, 14-16 March. P. L. Caruthers. 'Round-the-clock party room, card parties. Meade Frierson III will be fried.

**CoastCon,** Box 6025, Biloxi MS 39532. (601) 374-2933. 14-16 March. This seems to be the weekend for Southern Conventions. This new one is becoming a fixture after several years.

**NorWesCon,** Box 24207, Seattle WA 98124. (206) 822-9129. 28-30 March. Go West, con fan.

**Kubla Khan,** c/o Moore, 647 Devon Dr., Nashville TN 37230. (615) 832-8402. 2-4 May. Stephen (“Carrie”) King and Andrew J. Offut. 'Round-the-clock party room, midnight masquerade.

**Science Fiction Research Association,** c/o T. W. Hamilton, Wagner College Planetarium, Grimes Hill, Staten Island NY 10301. 18-22 June. For people who teach SF.

**WesterCon,** Box 2009, Van Nuys CA 91404. Los Angeles CA, 4-6 July. Roger (Amber) Zelazny, Bob Vardeman. The big traveling Western convention for 1980. Always a three-ring circus.

**EmpiriCon,** Box 682 Church St. Sta., New York NY 10008. 4-6 July. Hal (Mission of Gravity) Clement, Samuel R. (Dhalgren) Delaney. The hotel is located in Manhattan's garment district. Recaptures the flavor of the LunaCons of the 1960's.

**NorEasCon II,** Box 46, MIT PO, Boston MA 02139. 29 Aug.-1 Sept., 1980. Damon Knight, Kate Wilhelm, Bruce Pelz. The World SF Convention for 1980, back in the Hub after 9 years.

# WRITTEN IN SAND

by Robert Chilson







**art: Frank Borth**

*The author describes himself as in his early thirties, unmarried, and the small economy size. He further claims to like non-fiction, science fiction, fantasy, whimsey, Nero Wolfe and the Rabbi mysteries, and any kind of shop-talk about writing and SF. "Written in Sand" derives from his surprised discovery of temporal shock.*

Purple Egyptian night, the stars clear, cold, remote. After the heat of the day the coolth was almost frosty. In the cavern it was dim, the smoky lurid torchlight seeming remote.

Pausanias crowded back beside Appolonius as the peasants grunted under the weight of the huge triangular stone slab. It was crowded here in the first widening of the cavern. There was more room farther in, where the jars full of books were stored—Hippias the overseer glanced superstitiously in that direction—but Pausanias had said here: so be it. The peasants bent to widen the hole with their short-handled hoes.

Pausanias watched with dull unseeing eyes as Hippias self-importantly examined the hole, the rock, and nodded: it would fit. The overseer himself took one end of the coffin, elaborately sculpted in the shape of a boat such as were dug out of old tombs. It was of the best cedar of Lebanon, lined with silk-fine linen, too good for a slave; but who can gainsay a man in love?

Dead silence; even the women left off their keening as Pausanias stepped forward holding the small, silk-wrapped bundle that had been a woman. Carefully he stepped down into the hole and laid her in the boat-carved coffin. One last time he looked on her face, pulling back the silken cloth. Taia's features were pale now, strange after the fever-flush of the past days; they were wasted by her brief, fierce illness but still beautiful, with that perfect nose, her pearly teeth barely hinted at between partly-opened lips like a child's. Her eyes were closed as if in the rest that had eluded her in those long, terrible, feverish days in the hot gloom of the shuttered house.

Appolonius lowered his aged frame carefully down and gently brushed Pausanias back, tucking the cloth in around Taia's tiny form with a fatherly murmur. Else Pausanias might have crouched, looking and remembering, till dawn. Hippias coughed, restless. The keening broke out again, led by the aged hag of a slave who had been a mother to Taia since Pausanias had bought her ten years

ago.

Pausanias and Appolonius climbed out, careful not to kick loose clods of dry dirt. The servants, and behind them the peasants—their degrees reversed for this funeral of a slave—crowded forward with a half-heard sigh. Appolonius raised his hands.

"You beyond the veil of that sleep we call death: receive this woman whose body we lay down here: cherish her as she was cherished here: much loved, greatly mourned, to be gladly welcomed. Thus do Ye in memory of that life that was."

He lowered his head and his arms.

"Thus your little life is ended now, O Taia," he said in the grave, fatherly tone he had always used to her. "Now begins that greater life beyond. Do not forget us. Await us there. We come.

"And we come soon."

Pausanias started at that; then he bowed his head on a sudden swelling in his throat; for a moment the tears almost came. The women sighed as they saw him master them, and shook their heads. Hippias, more respectful now though still self-important, stepped down carefully and fitted the cedar board into the coffin, tested it for tightness. The motherly hag flung a pitiful small handful of sun-scorched flowers down as he climbed out. Then, straining, crowding Appolonius and Pausanias back from the edge, the peasants lowered the stone slab. It fit well.

At once they began to fill in around its edges.

Crossing around the slab, Appolonius gestured to the rest of the mourners. The women broke into a wail as they retreated out of the cavern. The peasants finished their work and looked apologetically at Pausanias, then at Hippias. The overseer looked as if he would like to speak, but did not: Pausanias saw nothing but the slab. They filed out, leaving one torch.

Presently the old hag entered at Appolonius's command, carrying a stool and a candle. She removed the torch and left him alone.

Pausanias sat in the eye of a storm of emotion, too spent even to sigh. His initial feelings of guilt were gone, but regret would never end. He had run out of the drugs, in this mission's unprecedented length, that would have saved her. And his conditioning was too strong to break in the short time the fever gave him.

Within the cavern all was heavy, crimson darkness. Without, all was dull, purple darkness. The coolness foretold enervating heat and monotonous glare for the morrow, and every day after: empty days.

His mind drifted back over the past years: to his arrival in crowded,

noisy, violent Alexandria with his bags of gems, his discreet inquiries on the Bruchium where the great Library was, the meeting with Appolonius the scholar, a minor official of the Library. . . . The purchase of this insignificant estate far up the Nile—how he had tortured his memory to remember if it was in a "safe" area, untouched by archeologists, tomb-robbers, and acts of God. . . . The former owner of the land had been bankrupted by an ill-advised bet on the chariot races.

His purchase of Taia was still clear as an image in a dream, clear and fixed and untouchably distant: memories in amber. The dealer, an oily-faced, obsequious Greek with a lecherous buck-toothed smile and a habit of rubbing his hands together, was preserved there, pimples and all. Taia occupied the center of the vision, small, perfectly formed in her short tunic of fine linen, her large dark eyes cast down, fear imperfectly concealed in them.

He had been in love with her, he was convinced, from the beginning.

Taia spoke Greek and Latin with better accents than his own; her rippling flow of hair was gold with a flame in it—his first purchase after her had been earrings of coral set in gold. Circassian, said the slave dealer. It might have been the truth.

Pausanias remembered his agonized doubt of his bodyguards: could he trust them? A fear he had never had when it was his own skin, slit for the sake of his fortune. —Yes. Though bought for convenience, he had loved her from the first.

When had she begun to return his love? Surely it was before they left Alexandria for the estate. It was in his lodgings there that she told him of her early life in a peasant's hut in a mountainous far land. Where, she never knew. There they spoke a language she now sometimes remembered only in dreams; more often, almost remembered. She might have been five or six when the rains failed and funereal gloom lay over the little hut. And she was sold.

There was a confused memory of a trip from a smallish town to a big harbor city, where she was kept with women and girls in a big bare room. Then a long horrible trip by ship, every day of which she was seasick and homesick, even for the slave-barrack, but dared not weep. A torchlit night arrival in Alexandria and her eager desire for the morrow and the disembarkation. From the time of her sale till after her purchase by him that was the only time she had desired rather than dreaded the morrow.

A reasonably happy time in Alexandria in the slave-barracks where she was taught Greek and Latin, to sing, to dance, to sew.

Endless, quiet, slow-moving days, with the dread of eventual sale remote.

Until she began to blossom into a beautiful young woman and the dark fear came into her eyes.

It was a year before he had trained that fear wholly out, and later it returned, when she bore him no son, nor even a daughter.

Even with her limited background his lifestyle must have seemed odd. He had this estate, but it could not begin to support him and all his expenses. She knew of his gems, but he had never explained where they came from. But she never questioned that, nor his reason for purchasing the thousands upon thousands of books now in the five hundred pottery jars packed into the cavern farther back.

Fantastic expense, that slowly drained his purse. But only once had she commented on his odd mania. A new shipment of books had arrived from Alexandria and the baskets were opened. Taia had helped lift out the scrolls, crackling clean and new, sniffing of the ink. "No common passion!" she had said, and Pausanias had smiled and given her a roll of songs she could not read.

Appolonius, too, never questioned. Nor did he comment. Pausanias had engaged him to oversee the copying of those books that were not routinely copied for sale by the Library. His knowledge of literature was immense and his advice invaluable. Ranks of slaves in a rented room in the Library, each with a book before him, painstakingly copying it out under the watchful eyes of Library officials.

Unlike the usual copying factory, there was no reader here dictating the book to a score of copyists; each copied a different book. History, beginning with the first Ptolemy's account of Alexander; the science and technology of the Museum; selected literature. A few books on theology. The room was silent but for the scratch of pens on papyrus and the rustle of movement. From without came the bustle, clanging of cymbals, many-tongued yells, thumps, rumble of feet, of the Royal Harbor, drowning the lap of waves.

"Many lives of many men are inscribed here," Appolonius once remarked musingly, his eyes gleaming at the wealth of books displayed.

"What better monument to a life than a book?" he had said idly.

Appolonius's eyes, already old ten years ago, looked shrewdly at Pausanias as if to penetrate to reasons he had not asked for. Then he shrugged: they did not matter. "All are written in sand."

More than that he did not say. Odd that the book-man should shrug off the value of books, but Pausanias had too much to do to ponder it, overseeing the copying, the shipping of the books up the

Nile, the reorganization of his new estate, and of course there was Taia, then a new—bride.

Years of quiet, late-night conversations, discussions of books of philosophy, drifting conversations aboard the boats on the long voyages up and down the Nile, had taught Pausanias that to Appolonius a life was a man's total of thoughts, deeds, wisdom. To him life was a simple thing, perhaps far simpler than it would be to Thoreau, sixteen hundred years hence.

But just what that secret was, Pausanias had never divined. Only now in his grief did he wonder that to the old man a life needed no monument, a death no grief. Appolonius, who had loved her too, appeared—not unmoved—but serenely untouched.

Long after the candle expired, after a wrenching struggle that tore at Pausanias, he sat there. He felt the chill, but was too heavy to rise and fetch a cloak. It was all over now. He had known it when Taia began to fail while he struggled with his conditioning. He had striven mightily, and in the end almost won: he had ordered the books on hand to be jarred and buried safely, given orders for the disposition of the last shipments presumably now coming up the Nile, deeded the estate over to Appolonius. But too late; she died.

They had not told him how rapidly she was sinking—knowing he was already maddened, insisting as he was upon burying his beloved books—and death in any case was the province of the women. He had left her slightly improved at night and been called to her deathbed in the morning, before the dawn. Now the women wailed at his estate on the edge of the desert while he sat without sound or tears.

He might have dozed. Or been oblivious, in some tranced state of misery, of the passage of time.

At length he aroused himself with a mighty effort and stretched his stiff arms, legs, back; one calf was asleep. He limped carefully around the stone slab (so heavy, he thought), and stumbled tiredly toward the faint light.

The cavern mouth was in a narrow crack in a high hill whose back was toward the Sahara. Before him lay a small garden, with a fountain—a mere pool of water—amid a grove of trees that shaded a modest villa in Greek fashion, square, built around a central courtyard with more trees. From the front of this building one could look down the sloping land toward the Nile. The river proper was not visible, but here lay a westward arm, flung out and retracted within a dozen miles, that held water even in low stages. It gave to all this region life that it had not had a century ago or would have



a century hence.

On a bench a shrouded figure stirred. Appolonius, a blanket over his cloak.

"Look: the sun still rises."

Pausanias looked. The sunrise was hidden beyond the house and the trees and shrubbery Taia had helped him set around the concealed cattle-pumps. It was too early even for pinkness. She had often sat with him to view the dawn—never without praying for a manchild, to his silent pain.

"Not in there," he said. His voice was hoarse, choked with centuries of disuse.

"Owls and bats and foxes awake to life at night. Because we cannot see as they can, who are we to say there is no light?"

With a sudden rush of fondness and of renewed grief, Paul Enias knew that though Appolonius would do nothing to prevent him from committing suicide, it would greatly grieve him. Yet he could not explain.

And his mission was nearly accomplished. Though it might be to lose all, not to stay to oversee the end, he could not bear now to remain in this empty land. Appolonius's pain must be another guilt, added to his guilt at not saving Taia.

"Of what comfort is that to the living?" he said fretfully.

"At the time, none; later, more—never very much."

They sat in silence for a time. Again Pausanias wondered at Appolonius's acceptance. "How can you be certain that there is a sunrise for—those?"

"No man may be certain before his time." Appolonius's voice was calm with the calm of one who knows his time is soon. "We know only that this life arises from the soil, and to the soil returns. The soil renews its life annually, but nothing is wasted, as the peasants know. How then can we believe that the life of a man or a woman is wasted?"

"All things must pass away and the sand blow blank and smooth again for the next generation. Egypt—*Khem* in the old tongue—is old, Pausanias. Who now knows the names, the lives, the loves, of those who reared the Pyramids and those older tombs? Who knows who, and what thoughts, shaped that Face whose aspect so frightened Taia? But Pyramids and Sphinx are also written in sand; how short a time they will endure! Egypt was here before ever the oldest tomb was laid; it will be here after the last is crumbled away.

"Think now of those who loved and lost ages ago, whose dust blows about us now. Those who raised the Pyramids, those who

came before them, the unsung ones who lived and died in all their frog-multitudes up and down the Nile, and in other lands—all now forgotten. They had their time of life, long or short, happy or tragic, and returned to the land. Could we remember all their lives, the earth would not hold the accumulated grief.

"To make room on the earth they had to pass again behind that veil we do not understand and their lives here be erased. But do not think, because of that, that their lives were lost. Nothing is ever lost.

"Wherever Taia may be, here she is dead, gone, soon to be forgotten. However much we may grieve for her passing, this is good. For the earth's life is always renewed. Tomorrow there will be another Taia and another Pausanias who will never think of you and yours in the agony of their own grief, even as you do not think of those who went before.

"And that is good."

Good it might be, but comfort it was not.

Yet despite himself he thought of those dusty, faceless multitudes who had lived, loved, and died along the Nile in the ages past. Though breasting Time was his life's labor, oddly he had never thought more than idly of the people who lived along its banks; they had never seemed real. What a miracle that he had met Taia, one among that multitude!

"Not lost, nor wasted," he mused. "I had always thought I believed that, but . . ."

"Though the sands be blown blank behind each of us after we have gone, do not imagine that each does not have his task to do in this life. We are only forgotten *here*, only here does the sand blow over us. Each must complete his task; and having completed it, will await those who have not."

The breath went out of him and his face twisted in unseen agony. How could he explain that, his mission *here* completed, he must depart across a gap as great as death? Perhaps greater, if Appolonius were right. . . . Yet, calmer now, he knew that Appolonius was right; he must go and report the cache's location, though it would grieve the old man. Or was he merely fleeing his own grief?

He sat in silence for some time. The pale light in the east faded again; it had only been false dawn—but true dawn could not be far away. . . . There was a modicum of comfort in the reflection that he had done well what he had done. Over ten thousand books had been copied from the Library's store of seven hundred thousand. A few hundred more were still on order or coming up the river, but basi-

cally he had done all, and more than all, he had been sent to do. Thanks to Appolonius, the selection had been even richer than he had hoped.

Most of them had been packed away in wide pottery jars four feet high, without handles. Despite his raging haste the work had been done carefully; they were sealed airtight with wax and clay and carefully packed into the cavern behind them, dirt packed in around them that they might not fall over. They would survive for centuries there.

Appolonius could be trusted to complete the little remaining of the task, and to guard the cavern until memory of the burying was forgotten; that would not take long. Slaves could be freed and there were ways of scattering the peasants. He gave himself no further doubts on that score.

With a shake he arose. "Thank you, Appolonius. But this is farewell. I must leave you."

The old scholar nodded without surprise, the fine lines at the corners of his eyes deepening. "Then fare you well, Pausanias, if you must. I will follow soon."

This produced another spasm in Pausanias; he choked and almost spoke. Recovering, he said, "The estate and all with it are yours. You know my wishes. Guard the cavern well, and for her sake also."

"I will do so, though the memory of the burying of the jars will live longer than I. But have no fear of desecration."

"You have my deepest gratitude." Pausanias looked into the kindly old face for the last time. "Fare well."

"Fare well."

Turning his back on the closed house and the garden around it, he climbed the hill beside the cavern and faced the cold, sand-spiculed wind from the desert. It was not far from dawn and he must hurry. The wind rose, blowing more sand, and he strode swiftly to combat the chill. The stars danced far away, as in winter. The dry air drew his skin taut; he imagined he could feel it cracking and curling. He put his head down and paced into it with effort through the loose sand.

Time-sensing was not a simple matter. For months Paul Enias had trained under hypnosis, studied, brooded upon Alexandria early in the Christian era; even so he had landed later than he had intended. At any time he could have returned to the Twenty-First Century unerringly (to the date of his departure plus time elapsed in the past)—but if he stepped forward, it would be a million to one against his being able to step back to this precise time period again.

So he had been stuck here until his mission was finished. As best he could, he had had to make a life for himself here: it took years for scribes to copy off thousands of books. Hence his purchase of Taia. . . .

The night grew lighter and the wind stronger. Good. It would soon erase his tracks. He slowed his pace and cocked his head. He was not listening to any external sound, but feeling with his time-sense for the subtle shifting of the now. His ears as unfocused as his eyes, tuning out the whisper of the wind, he took a pace, hesitated, took two to the left. A pause, then he picked his way carefully again, concentrating on that inner guide.

Abruptly the wind shifted, blowing now more lightly and from behind him. The night was not much cooler, but far less harsh; the air was almost moist. Overhead, light thin clouds scudded between him and the stars. It was early night, not long after sunset.

Relaxing with a sigh, wiping and shaking away the loose grains of sand, he looked around. There was sparse grass underfoot, scorched and dead but a marvel nonetheless. The air was free of sand. To north of him was a light. He shook off the past and strode toward it.

A fence halted him—barbed plastic wire. Beyond it, cattle snorted. Beyond that was a field, irrigated; he saw the domes of sun-powered pumps. Next came a graveled drive, and he was at a house—a Jamal house of tough synthetic, with therm-electric air-conditioning and a sunpower-plated roof.

Dogs aroused the family; and a tall, youngish man stared at him under the yard light. He stared back. The man strongly resembled the peasants who spent so many thousands of years bent over their short-handled hoes, wearing only a dingy, dirty skirt.

After two false beginnings, he wrapped his tongue around Arabic phrases: "I am Paul Enias of the Cairo Institute Historical Project, on loan from the National Geographic Society/Smithsonian Institute. May I use your phone?"

His clothes confirmed him. Staring, awed, the householder backed into the house. Enias smiled at a chubby wife, an old mother, three children. The TV was ignored while he called long-distance, reversing charges. The phone was old-fashioned, audio only.

He made a brief report of his return, asked the date, and said that he would be in that night if possible. A brief discussion with the colonist family gave him the name and number of a man with an airboat taxi who could fly him to Cairo. The hack pilot had to be gotten out of bed, and was incredulous but fascinated by the identity

of his fare; he promised to be right over—"No charge, sir, no charge! I am more than glad to accommodate you!"

Next day a squadron of heavy-cargo airboats descended on the desert reclamation project, most of them army airboats lent to the Institute.

Paul Enias stood on top of the hill in unaccustomed shirt and trousers and scanned a changed landscape. What had been an eroded bluff was now but a gentle curve of hillside, sparsely grassed. The land rose up to half the hill's height now, thirty feet of sand and soil over the little oasis maintained so many years ago, for so brief a time, by the patient cattle. Now sunpowered pumps made all the land green to the horizon, where water glimmered: the Nile had receded, but men had brought it back.

A dozen Jamal houses were in view, perhaps housing the descendants of the very peasants who had lived within view of that hilltop yesterday.

But he was given no time for musing. Men boiled out of the airboats, loud-voiced, excited, confident. There was the Director of the Cairo Institute's Historical Project, Ali Jallud, smoking an endless chain of cigars, his hawk-face intent. The old Director, Amastan, had resigned in the eleven years since Paul Enias had stepped back through time: Enias had been so eager, and Amastan had smiled. . . .

The liaison officer, Joel Doughty, was also new to Enias. His duties were the care and feeding and assignment of trained time probers, and the training of native probers. He worked directly for the government, under the American Historical Program, a federal boondoggle that had replaced the old institutional cooperative system Enias had trained under. Doughty was short, thick, heavy-featured, confident; his bald red head was exposed to the ferocious sun.

He slapped Enias with a meaty hand. "Okay, boy, give us the good word: where do we dig?"

The technicians had laid out their sonic equipment and taken a profile of the hill. Enias studied it and pointed out a notch in the bedrock. "Here was a watercourse. It undercut a shelf farther down, then everything filled full of dirt. Later a spring washed out a cavern under the shelf. That's where they are."

Jallud spoke, his voice staccato, determined. "It would never do to drill straight down; we'd have to go through that shelf, might break it off and smash everything."

A small, ugly nuclear-electric tractor was unloaded. It crawled down the slope, pulling a trencher. A few passes and it had cut a

deep narrow ditch in the face of the slope. Excess dirt was piled down the hill. Bemused, Enias realized that one end of the ditch was at the tangled back garden, a grove of trees that had shaded the house on the west. Were they cut for wood when the wells went dry?

The big archeological drill was placed in the ditch. The bit followed its ultrasonic guide horizontally into the hill and was withdrawn. A reamer was put on in place of the bit. It ran in and out, in and out, the loosened dirt sucked out and blown down on the dirt pile. After an interminable time the tunnel was two meters in diameter and the drill was removed.

The tunnel was lined with plastic prefab arches. Doughty took up a portable airdrill and said, "Okay, now show us just where we are." Dragging the air line after him, he led the way down into the ditch.

Where the drill had sat, a couple of Egyptian soldiers in loose khaki shorts stood bent over shovels and a broom, removing the loosened dirt. A wave of dizziness went over Enias; their pose was poignantly familiar. Then he saw the slab they were cleaning and almost fell.

It was a little darker but just the same. He stared up the tunnel, shaken.

Jallud shifted uneasily and said, "Go on."

Doughty looked shrewdly at Enias. As he ducked and went up the tunnel Doughty tapped his head significantly and whispered, "Temporal shock." Jallud nodded in sudden, complete understanding and looked after Enias with interest.

The ultrasonic guide had stopped the bit within half a meter of the first row of jars. Here the ceiling was falling. Doughty raised his airdrill. The whirling brush sprayed dirt, but most of it was sucked up and removed; presently the rock of the shelf was bare over their heads and dirt had stopped falling. Next he turned the drill on the dirt before them and soon reached the jars.

Enias took his time about examining them. His hands were trembling. Despite the loud-voiced men, the electric lights, and unaccustomed clothing, the cavern packed full of dirt, he kept seeing it as it had been—yesterday. Empty and open, with torchlight flaring, Taia's still face, Appolonius's calm one. Or earlier, when the nervous peasants grunted under the weight of the jars, the gloomy voice of Hippias urging them on.

The unpainted jars were stained now by the seepage of the past few decades, since the rains had begun. The clay of the seals was powdery hard. But nothing else had changed. How could he believe

that yesterday was eighteen hundred years ago? Appolonius, Hippias, that slave-hag Taia had loved so well—Taia herself—they were so clear and alive in his memory.

He cleared his throat. "This is the first rank on the right; there should be stone to the right of them. Have your men angle to the left. The complete list of books is in one of these front jars. Will you need me for anything more?"

They were amazingly affable. Doughty slapped him; even Jallud smiled.

"You go on back to Cairo, old man, and hole up in the Institute's special suite. They'll keep people off you. Spend your time thinking what you'll sell the exclusive of this trip for!"

Enias set his teeth. "It's not for sale," he said shortly, and they stared as he went down the tunnel.

"Temporal shock?"

"I guess. Every now and then one comes back and refuses to talk about it. They get over it," knowingly.

The Twenty-First Century was bright. Returning was like waking from a dark dream to find the sunlight streaming across one's bed. So much of his time had been spent bent over papyrus by a sputtering oil lamp . . . dark days, dark days. Enias found himself blinking at the white light.

Arabic and English . . . Twenty-First Century clothing, soft as silk and brighter than any king's . . . vast volume of mechanical noises . . . the taste of carbonated drinks and ice cream in a desert land . . . the deep, resonant voices of newscasters. . . .

At first strange, after a moment each was accepted and became again familiar, things he'd merely laid aside, not lost. And with each awakening remembrance, the past days in all their darkness faded like the memory of a dream. Appolonius, Taia, Hippias—and Pausanias—were small, clear, dimmed, like scenes viewed through the wrong end of a telescope. He had come through a door and left them behind. Now he felt numb, spent. . . .

Doughty dropped in on Enias the next morning. He was as loud, confident, and vigorous as ever, sweating and demanding something to drink. He looked at Enias calculatingly as he spoke, and his voice rasped the nerves. Enias was used to more respect.

"Well, old boy, I suppose you know you really did a job, this time. The biggest historical cache ever made. They've gotten the first thirty jars out and they found that list. They say a good part of Hellenistic history will have to be rewritten. They're especially com-



plimenting you on your choice of books."

Appolonius's choices. . . "Yes," he said shortly. "That reminds me—I wasn't able to get all the important books; some had been destroyed as far back as 47 B.C.—Caesar's conquest. Here's a list of them, with dates of writing."

Enias dug into the purse he had worn in the past and brought out a fresh, new scrap of papyrus.

There was the list, written in Greek with a reed pen eighteen hundred years ago, every blot and stroke the same, not even faded. He had copied it off from older lists prepared by Appolonius over years, copied it off two days ago, the day before he returned. Pausanias remembered the copying suddenly and strongly, the darkened house, his fear for Taia who was even then slowly sinking, his relief at his hard-bought decision to bring her back with him. . . . With an effort he laid it down on the table, not hearing Doughty's alien words.

Prosaic and unremarkable, like so many pieces of papyrus he had used unthinkingly and discarded in a long-lost land. It brought back a host of images, sounds, smells, emotions, voices—ten years of life snatched out of time. The color and sound and movement of Alexandria—even the garbage and sewage poignant—the ripple and gurgle of the Nile against the barge on their trips to the city, the long lazy river-journey days, the sounds of hippos surfacing, lions roaring lonely and mournful; melancholy ruins in a land littered with the bleached bones of too much history. . . .

Laced through it all, Taia's face, hair flaming around it, childish, laughing, piquant, with now and then that strange, haunted, fearful look in the depths of her eyes. Now lit with delight like the rising of the sun, now sunk in despair over the burning of dinner. Often in the nights Pausanias had awakened and felt for her, fearing that she was but a dream. Always she had yearned for a son, but he had been sterilized against that complication. He didn't even have that left of her.

Alive three days ago, so recently that his memories of her were alive too. And then she was gone, through a door that closed darkly behind her. A door she expected him to follow her through, in his good time.

Instead he had turned his back, walked through a different and to them incomprehensible door, put between them a gap as great as death. . . .

How long had she waited before giving him up, how many generations had spawned in frog-multitudes along the Nile while she

waited, how many times had the sands blown smooth and been marked again over his departing footprints?

And yet she still lived, on the other side of his door! If he could but step through, return to that time . . . no, he knew it could not be done. Not precisely enough; the Uncertainty Principle forbade it, the gods themselves opposed it. At best he might land a hundred years too late. Or meet Appolonius as a young man who would look at him strangely. . . .

Appolonius . . . his dry, kindly expression, his shrewd eyes and understated humor . . . Pausanias's mouth began to tremble. He should not have left; for in his good time he would have followed Taia. Perhaps even now it was not too late. Could he return through his own door and, in good time, follow her. . . ?

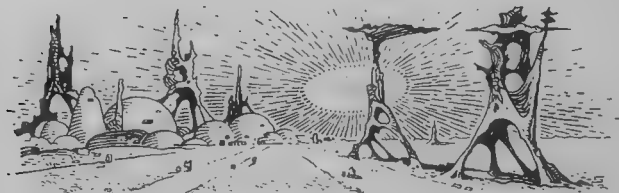
"The president of Egypt—Moussa—would like to thank you personally," Doughty's bull voice came loudly from a distance. "In a public ceremony, of course. It would mean a lot for the Program. . . ."

He had been talking ever since he entered the suite.

"To hell with the Program! To hell with the president! Do you think anyone's thanks can pay for what I do? I'm sick of it! I resign! Tell them so. And tell them time probing is for fools. The past is better dead!"

Enias had one last look at Doughty's nodding, understanding face, lips pursed over the phrase *temporal shock*. Then he had slammed the door despite its stop.

Half way down the hall he realized he had spoken in Greek to Doughty.



# HOW CROCK AND WATKINS CRACKED A CODE

by Martin Gardner

In the year 2019 a remarkable bacteriophage (a virus that infects bacteria) was discovered by Dr. Frank Crock, a bacteriologist at Harvard University.

"I can't believe it," said Crock to his associate, Dr. James Hugh Watkins. "The DNA message in this virus is the simplest and strangest I've ever seen. It just keeps repeating the same sequence of a dozen triplets."

All DNA information, along the double helix, is given by a sequence of four bases: adenine, cytosine, guanine, and thymine. They are grouped as three-letter "words," using the four-letter "alphabet" of the initials A,C,G,T. The new phage contained a DNA "message" that consisted of twenty repetitions of the following 36-letter sequence:

**GTT ATG TCC CTC TCA CTC TCC CTC ACG CTC TGG AGA**

"It certainly looks artificial," said Watkins. "Could it be that the phage was sent here by extraterrestrials?"

"I wouldn't rule it out," said Crock. "Back in 1979 two Tokyo scientists suggested that some of our viruses might be artificial and sent here as coded communications from another planet. It would be an efficient way to communicate because the virus would replicate rapidly until it covered the earth. If I remember right, the two Japanese scientists actually searched the DNA sequences of many simple viruses, looking for some sort of communication. They failed to find any. But this virus couldn't possibly have evolved here. It *must* be artificial."

Crock and Watkins began an intensive study of the 36-letter sequence to see if they could find anything that resembled a communication from an alien intelligence. It took only a short time to discover that one of the letters marked a familiar sequence of integers that could not have been a coincidence. What sequence did they find? See page 55 for the answer.

# ON HOW SCIENCE HAPPENS: THE VOYAGER I DISCOVERIES

**By Susan J. Kovach**

all photos courtesy of the Jet Propulsion  
Laboratory, California Institute of Technology,  
Pasadena CA.

*The author, an engineer at the Jet Propulsion Laboratory,  
is one of the designers of the upcoming Galileo Probe,  
which will give us an even closer  
look at Jupiter and its strange satellites.*

*Far out in interplanetary space, a tiny spy from the planet Earth is uncovering secrets. Gliding effortlessly within the solar wind, this conglomeration of cameras, spectrometers, detectors, and other instruments is closing in on the giant planet Jupiter in an attempt to solve its mysteries and enlighten scientists back on Earth. As it quietly approaches the planet and its satellites, the 1800-pound spacecraft begins taking pictures of all it sees, and gathers other data about the magnetic field, radio emissions, atmospheric composition, and wave-particle interactions. It will visit five of its satellites, prying their secrets from them, before it continues on its journey, a journey which will take it to the ringed planet Saturn and eventually out of our solar system.*

When NASA's Voyager I spacecraft flew by the planet Jupiter on March 5 of this year, much of the mysterious veil which shrouded the Jovian system was suddenly lifted, seemingly overnight. The bold little traveler braved the inhospitable environment of space for millions of kilometers and 18 months time to reward eager scientists with surprises, new discoveries, and more puzzles. It is one of two Voyager spacecraft, which are identical, each capable of meeting the objectives of either mission and their various options. Voyager II was launched from Cape Canaveral aboard a Titan Centaur rocket combination on 20 August 1977; and Voyager I was launched on 5 September, onto a faster, shorter trajectory and took the lead position before the end of the year. Four months ahead of Voyager II at Jupiter Encounter, it will be about nine months ahead of its twin when it reaches Saturn in November of 1980. Already, Voyager I has taught us more about Jupiter and its satellites in three months than has been discovered since Galileo first trained his telescope on

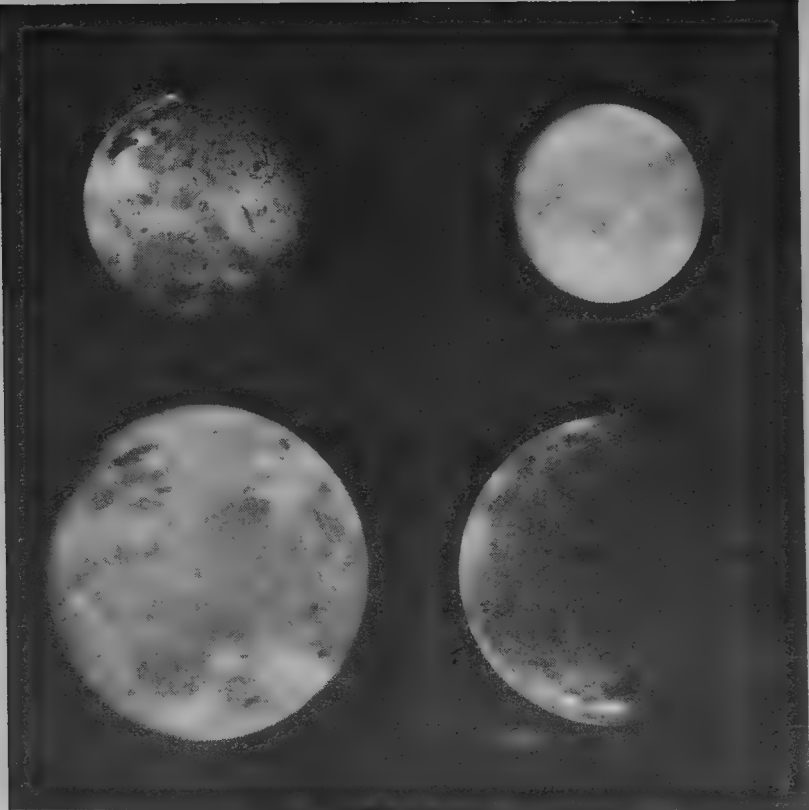
the gas giant in 1610. Yet remember that it has indeed taken since the time of Galileo, over 300 years, to reach this point. It did not happen overnight. Galileo's discovery of the four Galilean satellites—Callisto, Europa, Ganymede, and Io—had shocked the world and was the beginning of this centuries-long fascination with the Jovian system.

Jupiter and its moons have been described as a miniature solar system, a model of our own solar system, with the inner moons representing the inner planets and the further moons being likened to the gaseous outer planets. What fascinated scientists is that this mini-system could be similar to our solar system in its early stages of existence; and by studying it, much could be learned about the origins of Earth, the Sun, and the other planets. But up until Voyager, information about Jupiter was slow in coming and difficult to obtain. Astronomers have photographed Jupiter since at least the late 1800s, but photographs from Earth gave little information; Jupiter is all weather, with nothing much else to see. And such photography only served to raise more questions about the planet and its moons. Why are the cloud bands so well-defined? How deep is the cloud cover? What is the surface like beneath it? And just what do the satellites look like?

It wasn't until the early 1960s that astronomers began observation programs in which they took pictures of Jupiter every hour all night long, on every night that was good for observing. This method produced excellent results, even though the pictures were of poor quality. The Great Red Spot was found to be a giant vortex, swirling like a hurricane on Earth. Scientists discovered that the Spot moves slowly around Jupiter, but not smoothly. It moves, then stops, then moves again, these oscillations occurring almost precisely every ninety days. They found what appears to be a high-velocity jet-stream in Jupiter's northern hemisphere, the current of which flows in the same direction as the planet rotates, with wind velocities measured at 170 meters a second.

But scientists wondered if there were more features like these, and ground-based observations were still not adequate, due to the interference of the Earth's atmosphere. Many times, observers have seen "something" there, but have been unable to identify it. The moons remained a mystery; they were simply too far away to be clearly seen, too small to show anything that could be taken seriously.

But Voyager I, with its high-resolution photography, has enabled us to see what ground-based observations couldn't show. It discov-



*Io      Europa*

*Ganymede      Callisto*

*Composite Photo*

ered that Jupiter, like its large companions Saturn and Uranus, is also encircled by a ring, which cannot be seen from Earth. It found auroras and lightning, flashes of light in the night sky, a phenomenon which scientists believe may be a factor in the formation of complex organic molecules. And on the surface of Io, Voyager found that its young appearance was due to active volcanoes, which are constantly renewing that surface. But one of the biggest surprises of all was the close-up look at the Galilean satellites. Galileo would

have indeed been astonished to see how totally different from one another his four satellites are.

Io's surface was found to be unexpectedly smooth. Shockingly colorful, it is a wild blend of white, black, red, and sulphurous orange. The black areas could be lava lakes and deposits of volcanic ash. Features which appear to be calderas, collapsed areas around volcanic vents, were also seen. It is believed that the material from the volcanic eruptions follows a ballistic trajectory and falls back onto the surface rather than escaping into space. This is the reason for the lack of meteorite impact craters. The violent volcanism is also tied in to the sulphur torus, a ring of highly ionized sulphur surrounding Jupiter at about the orbit of Io. The torus was found to have temperature readings of up to 250,000 degrees Kelvin, much hotter than expected. Adding to that puzzle, ion speeds in the torus of 5,000 kilometers a second were detected, and it is not yet understood how ions are accelerated to such speeds, or how they are heated to such high temperatures.

Europa, the smallest Galilean satellite, also seems to lack impact craters. Its dull, grey-brown surface is believed to be composed of rock and ice. Systems of long linear structures which cross the surface in various directions are possibly fractures or faults in the crust. Some of these linear structures are over a thousand kilometers long and about 200 or 300 kilometers wide.

Even more fractured is the surface of Ganymede, Jupiter's largest satellite. With a radius of approximately 2600 kilometers, about 1.5 times that of our Moon, it has a bulk density of only 2.0 grams per cubic centimeter, almost half that of the Moon. For this reason, it is believed that Ganymede is composed of a mixture of rock and ice. Various colors of different regions probably represent differing surface materials. The many linear features could be multiple fracture zones, and the long white filaments resemble rays associated with impacts on the lunar surface.

Jupiter's fifth satellite, Callisto, is believed to be the oldest in the system of Galilean moons. It is about the size of the planet Mercury, and is also thought to be made up of rock and ice. Callisto is much more cratered than Ganymede; and of particular interest was a large prominent bullseye feature, an impact basin, similar to Mare Oriental on the Moon and Caloris Basin on Mercury. This is the first recognized basin in the Jovian system and supports the estimates of Callisto's surface age (possibly 4 to 4.5 billion years). Apparently the basin was formed by a major impact that melted the moon's icy crust and may have come close to penetrating it. The crust then



refroze, leaving the feature with an outer ring of about 2600 kilometers across. The lack of high ridges, ring mountains, or a large central depression suggest the near penetration of the crust, and it is thought that Callisto may have a thicker crust than Ganymede.

Voyager also gave us our first good look at Jupiter's innermost satellite, Amalthea, which until now had been merely a speck of light as seen from Earth. The tiny moon had never been photographed with any spatial resolution, and weeks of Earth-based observations and computer calculations were necessary to determine its orbital path so that the cameras could be pointed to it accurately. An odd egg-shape rather than spherical, Amalthea is approximately 140 kilometers wide and 260 kilometers long, and it always points its long axis toward Jupiter. It is not certain whether the satellite's reddish color is characteristic of its bulk, or if it results from a coating or alteration of the surface material. Amalthea's elongated shape could be due to the opposing gravities of Jupiter and the other satellites, and it may even be on the verge of being torn apart.

These major discoveries head a long list of gold-mine strikes made by Voyager. Some of these discoveries were totally unexpected, and seem to have been made merely by being in the right place at the right time. In some cases, scientists were looking for something in particular, but did so without much hope of actually finding it. Just how were these discoveries made? What processes led to a certainty in what was being seen? Let's first look at what many people think is the way scientific discoveries are made. The popular misconception is that science is a large collection of facts, and that if a scientist sees these facts, then this is all he need do. Dr. J. Bronowski, in his essay "The Creative Mind," talks about this misconception and about a common view of scientists. He tells of how they are pictured as "the colorless professionals of science, going off to work in the morning into the universe in a neutral, unexposed state. They then expose themselves like a photographic plate. And then in the dark-room or laboratory they develop the image so that, suddenly and startlingly, it appears, printed in capital letters, as a new formula for atomic energy." This would be like simply seeing facts; in the case of Voyager, it would be as if someone looked at a photograph of Io and said, "Oh my, there are volcanoes on Io."

It wasn't that simple. Scientific discoveries are not made by performing routine textbook calculations, or only staring at photographs. To gather information from photographs, you must know what you are looking at. You must have some idea of what you are looking for, based on previous knowledge and observations. Imag-

ination takes over and leads to speculation, theorizing. Theories are tested; and if they fail, they are tested again. New theories are developed, and a trial and error procedure takes place. Eventually, you may or may not hit upon a discovery.

For example, at a time when it was believed that the Earth was the center of the universe, Copernicus decided that the orbits of the planets might look simpler if he looked at them from the standpoint of the Sun and not the Earth. This use of imagination led him to develop his theory that the planets do indeed revolve about the Sun. His findings were not printed until nearly a dozen years later.

Johannes Kepler used analogies and guesswork when he formulated his laws of planetary motion, which our fundamentals of mechanics are based on. He used a wild theory taught by Pythagoras in the sixth century B.C., which stated that the distances between the heavenly bodies matched the lengths of the strings that sound the different musical notes, and that the spheres that carry the heavenly bodies make music as they turn. It was a farfetched theory at best, and it didn't work; but Kepler felt for his laws by way of analogies, trying to relate the unknown with things that he knew. And he eventually hit upon his laws.

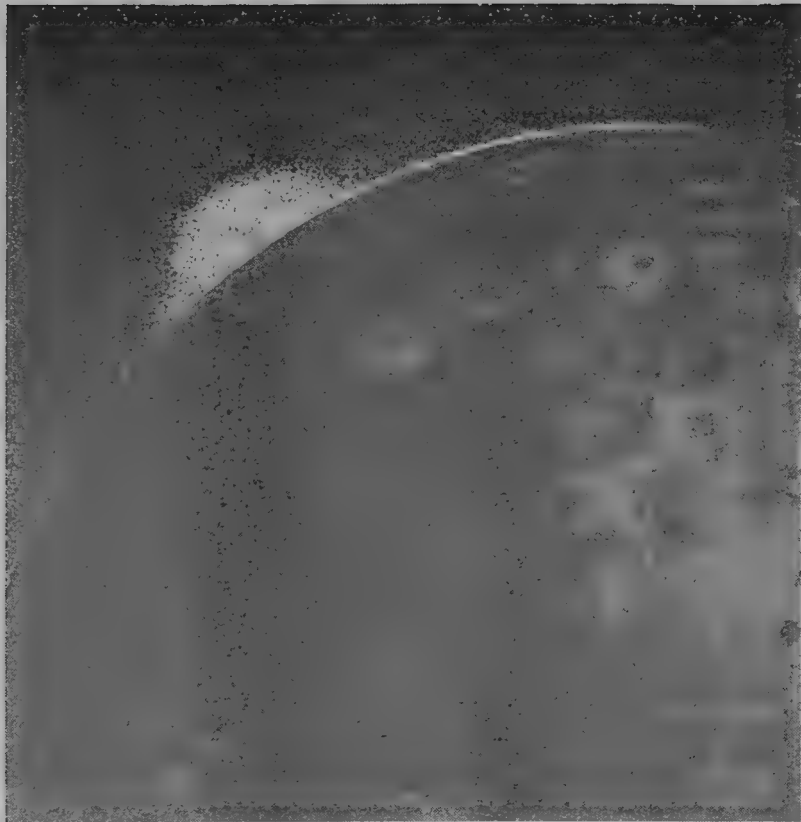
Isaac Newton stretched his imagination to the fullest when, upon seeing the apple fall to the ground, he thought that perhaps the force that had reached to the treetop and caused the apple to fall might actually reach out into space; and maybe that force was what held the Moon in its orbit. These scientists all developed theories and an organized method of testing them. They speculated, tested, failed, and tried again. These things, along with a lot of hard work and a little bit of luck, are what make science happen. And these things are what helped to make the Voyager discoveries.

At the NASA-Caltech Jet Propulsion Laboratory, science was happening over and over again during the Voyager Jupiter Encounter. JPL is the hub of Voyager activities, responsible for tracking, commanding, and obtaining data from the spacecraft. Data poured in, and scientists worked round the clock to analyze it. Picture images came in at the rate of 115,000 computer bits per second, which corresponds to as many as 1800 pictures a day at the height of activity. This is quite a lot of data to analyze, and a large percentage of the images have yet to be studied. The Jupiter images require tedious analysis; and results of this type of slow, careful study may not be known for a year or more. But the images could be viewed in real time on monitors and computer terminals, with the JPL Mission Control and Computing Center computers building



*This is the image in which Linda A. Morabito discovered the first extra-terrestrial volcanic eruption. In addition to the eruption at lower right, another eruption is taking place on the terminator (line between day and night) where the volcanic cloud is reflecting the rising sun.*

up the images from data stored on discs in digital form. And it was this real-time viewing that yielded some of the most fascinating discoveries. As the images of Io grew sharper, age estimates became younger and younger. They showed a surface that was much smoother than expected. There was much speculation as to why this was so, but no real answer was certain until shortly after the Encounter.



*This is an enhanced photo reconstruction of a volcanic eruption on Io.*

It was four days after Encounter when Navigation Engineer Linda Morabito, of the Navigation-Radio Science Team, first noticed something unusual on one of the optical navigation frames. These are images of the satellites and stars in the same field of view, used for navigation. They are also used for Post Encounter Satellite Ephemeris Reconstruction, which is not critical for navigation, but is rather a look backward to better see where the satellites are located and where the spacecraft had been. Linda had been studying frames for Satellite Ephemeris Reconstruction when she came across the unusual image. Looking for a star in the same image with Io, she used the computer to enhance weak signals, and thus the image of Io was

also enhanced. It was then that she saw an anomaly: an odd crescent shape seemed to be rising from the surface of Io. It was not visible before the image was enhanced. The first thought was that it was caused by a spot on the camera lens, which would cause a blemish at the same location on all images. Known blemish locations are stored in the computers to be checked against such anomalies. When this was done, it was found that the blemish locations did not correspond to the crescent shape. Possibly it was a new blemish, so camera malfunction was then suspected. However, a camera expert pronounced that no known quality of the camera could induce the appearance of the anomaly, so the next step was to find out if something real was indeed being imaged by checking the brightness levels. When the brightness levels were found to be the same as those of Io in regions receiving light reflected from Jupiter, it was then concluded that the image was real. Linda contacted the head of the Navigation Subteam, Dr. Stephen Synnott; and the theorizing began.

The anomalous crescent was large, estimated at a minimum of 1000 kilometers in diameter. From its appearance, it could have been another satellite behind Io, but which one? According to the computers, no known satellite was near Io at that time. Could it then have been a new satellite? It was highly unlikely that anything so large and bright could not be seen from Earth, so that possibility was ruled out. Within a half an hour, all possibility of satellites, known or unknown, had been ruled out.

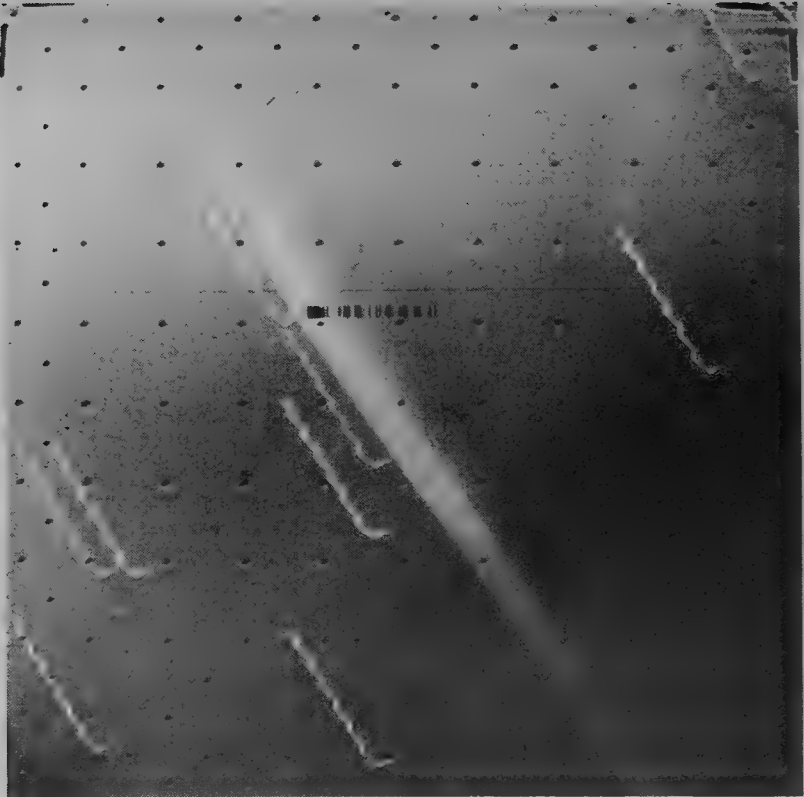
The Imaging Science Team, which is responsible for the high resolution photography, was informed of the situation. It was determined that the anomaly was definitely associated with Io, and Stewart A. Collins of the Imaging Science Team suggested that it might be a gas cloud. Where exactly on Io was it located? Enough information had already been gathered that some longitude and latitude charts were available. Consulting these, Morabito and Synnott correlated the possible cloud to the large, vaguely heart-shaped feature on the surface (Walter Sullivan of the *New York Times* called it a hoofprint, since Io is named after one of Jupiter's lovers who was transformed into a cow; and there is a conspiracy among the SF writers who attended the Encounter to call it "Sullivan's Hoofprint"). The cloud was found to be at least 275 kilometers high. Once the location was known, the Imaging Science Team then went back to the Encounter images, examined them more closely, and found that there were volcanic eruptions all over the surface.

This is a case where the discovery was not something that was

being looked for specifically. Volcanism had been suggested only a few days before Encounter in a scientific paper published by Stanton J. Peale, of the University of California at Santa Barbara, and Patrick P. Cassen and Ray T. Reynolds of NASA's Ames Research Center. They stated that a "tidal bulge," produced by gravitational forces, exists on the side of Io which is always facing Jupiter. The resonant periods of the inner satellites of Jupiter leads to large, forced eccentricities in Io's orbit, so that Jupiter pumps the bulge in and out as Io swings closer and farther away. This causes the effect known as "tidal heating," and as a result, they believe: "Io might currently be the most intensely heated terrestrial-type body in the solar system . . . one might speculate that widespread and recurrent surface volcanism would occur. . . ." But looking for volcanism was not planned in Voyager's observations. In Imaging Science, observational sequences were limited; the majority of requested observations simply could not be accommodated because the Imaging Team was already swamped with data. Many images cannot be studied closely right away.

But Navigation Engineering data must be looked at right away. "We process each and every optical navigation frame as it arrives in the [navigation] area," explained Morabito. "We're here round the clock, very busy; and we must use all of the data." That particular frame had been imaged the day before she studied it; but since it wasn't necessary to the navigation of the spacecraft, some of the immediacy had dropped off even in the navigation group. It was past the Encounter, and the pressure was off. "That's why it was being studied at 9:30 A.M. instead of 6:00 A.M.," said Morabito. It was seen in enough time, however, that Voyager II could be re-programmed to study the volcanoes. A time sequence "movie" is now planned to further examine the volcanic action.

One of the things that helped the discovery along is that this was the largest of all volcanic eruptions seen on Io so far. "When I was enhancing the weaker signal of a star, it nearly jumped out at me," said Morabito. "I couldn't miss it." The scientific process of elimination could well have ended right there, before it had even begun, if the eruption had been brushed off as merely a reflection or a camera malfunction. But Morabito was too curious. "There wasn't any way my curiosity could be suppressed until I found out what it was." This insatiable curiosity fits in well with the scientific discovery process. It is interesting to note that while all of this was happening in Optical Navigation, someone in Imaging Science also spotted a volcano at nearly the same time, before the discovery was



*The first evidence of a ring around Jupiter is seen in this photo taken by Voyager 1. The multiple exposure of the extremely thin faint ring appears as a broad light band crossing the center of the picture. The edge of the ring is over one million kilometers from the spacecraft and 57,000 kilometers from the visible cloud deck of Jupiter. The background stars look like broken hairpins because of spacecraft motion during the 11-minute exposure. The black dots are geometric calibration points in the camera.*

definite. Joe Veverka noticed a big fountain of spray at a different location on Io's surface. Working independently, the same conclusions were ultimately drawn.

The discovery of the ring encircling Jupiter came about in an entirely different way. It is theorized that the ring systems of Saturn and Uranus were formed by the destruction of a moon or large



asteroid which had wandered too close to the planet, getting caught up in its powerful gravitational forces. It seemed likely that Jupiter may also have rings because of its strong gravity and the number of moons it has; it is also near the asteroid belt. But this was a matter of opinion, and Imaging Science's Andy Collins points out that observation time was indeed scarce, and there were priorities. "You had to overcome people's preconceptions and fight for observation time," he said. "Although the ring was a possibility, it was a long shot."

But Dr. Tobey Owen, of SUNY at Stonybrook, felt that there was enough evidence to warrant taking a look. It was decided to look especially closely at an area about halfway between Jupiter and Amalthea. This location was chosen based on charged particle data received from Pioneer 10, which indicated that either another moon was located there, or—more likely—a ring system. This was also based on studies of Saturn's rings and their location with respect to the planet and its innermost satellite Mimas. By studying images of this particular area, enhancing both wide angle and narrow angle frames, the ring was eventually found. The best image of the ring is a six exposure shot, which shows a dozen or so stars and the ring from an edge-on view. A certain cluster of stars appears very bright, and it was known that the cluster would be visible at this point. This helped in determining the proper position to look for the ring. From the image, the ring thickness was calculated to be about 30 kilometers, although it is probably thinner. The width of the ring is not known because the camera angle couldn't show it, and the ring cannot be seen from Earth. But studies by future Jupiter missions will surely tell us much more about the newly discovered ring. Determination helped to bring this discovery about, along with the good fortune of being in the right place at the right time.

Lightning and auroras were seen as a result of the studies of Jupiter's dark side. Auroras, like the Northern Lights on Earth, were seen as thin layers of light over the poles. Also seen only from an edge-on view, they were located just above the cloud surface. They varied in intensity very rapidly, unlike the auroras on Earth, which vary much more slowly. And lightning was discovered, seen as flashes of light at the tops of ammonia clouds. It is a significant discovery because lightning has been postulated to be a catalyst for the formation of life. Laboratory tests using energy bolts and the same gaseous ingredients as Jupiter's atmosphere have been conducted in an attempt to form organic molecules, but they have not formed the expected molecules. According to Dr. Allen Cook, of the

Harvard-Smithsonian Center for Astrophysics, the spectra of the lightning on Jupiter is not known yet, and the proper spectra is needed to conduct the experiments. "This is something that the Galileo Jupiter Orbiter and Probe will be looking for," he said. Images of the dark side are being carefully studied to locate more lightning flashes. "The lightning flashes seem to be strung out on belts of latitude," said Dr. Cook, "and they appear to be confined to one part of the planet at any one time." There might be more lightning under the top layers of clouds, but it is unlikely that these flashes will ever be seen. Storm activity caused by Jupiter's internally generated heat make it possible that there is a great deal of lightning activity all over the globe. The search for lightning was one of the goals of the planetary radio astronomy experiment carried by Voyager, but no one was really sure that it could be seen by the cameras. The time spent looking was well worth it.

Many more discoveries are sure to be made from the careful study of the Jupiter and satellite images. The major discoveries mentioned are good examples that science doesn't just happen by facts displaying themselves. A lot of careful planning and study led up to the discoveries. Along with all of the things mentioned about the process of scientific discovery, the hard work, dedication, and persistence on the part of the scientists played the largest role in making science happen. While the scientists are still working hard on the Jupiter data, Voyager is now on its way to Saturn. We knew actually very little about Jupiter, but we know even less about Saturn. Everything that Voyager sends back from the ringed planet will be all new and exciting. Voyager II may even go on to Uranus, but both will eventually leave our solar system, carrying with them a message from Earth. The gold record of sights and sounds from our planet is a message to whoever might find it, and this could be the most important discovery of all. But right now, we are all waiting for our first close-up view of the most spectacular body in our solar system.

When Voyager I flies by the planet Saturn in November of 1980, science will be happening all over again.

## EPILOGUE: JUPITER REVISITED

— "We have here the oldest and the youngest, the darkest and the brightest, the reddest and the whitest, the most active and the least active, and the flattest objects in the solar system."



*A close-up of the cracked surface of Europa was taken by Voyager 2. The complicated linear features appear even more like cracks or huge fractures on closer examination.*

- "What we've seen is beyond the wildest dreams of anyone."
- "It's no surprise that we're surprised."

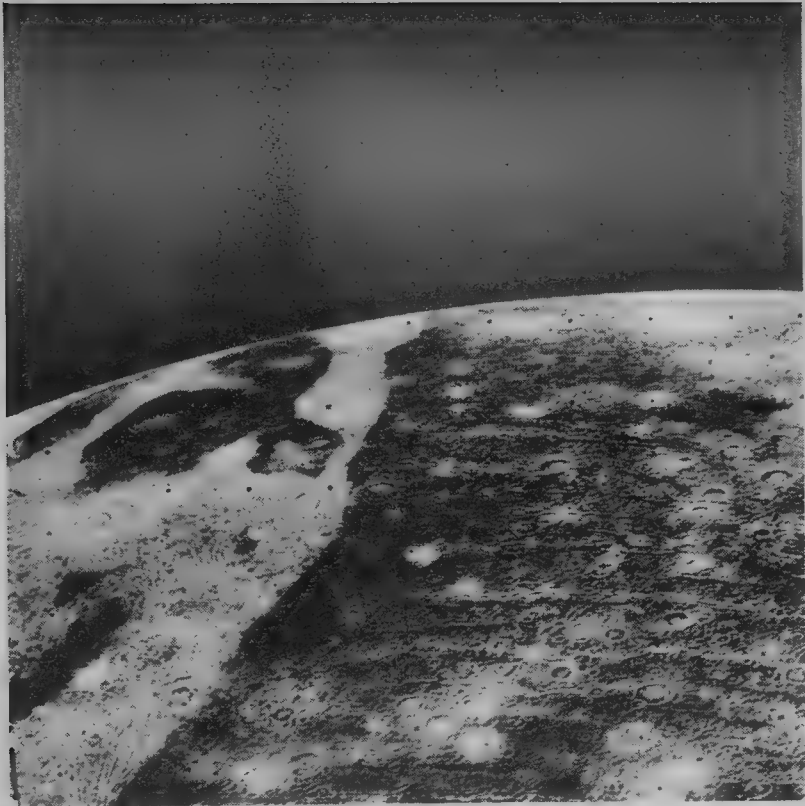
The first phase of NASA's Voyager Mission drew to a close on July 9, 1979, as the Jovian system was visited by the Voyager II spacecraft; and comments like these were heard everywhere at the Jet Propulsion Laboratory. Voyager II, like its twin craft, Voyager I, returned a wealth of information to delighted scientists before swinging out on the next leg of its journey—to a close encounter with mysterious Saturn. By encountering the Galilean satellites

during the approach to Jupiter rather than on the outward passage, as done by Voyager I, Voyager II obtained high-resolution photographs and other measurements of their opposite sides, and also took a closer look at Europa, Callisto, and Ganymede. As a result of Voyager I findings, Voyager II was reprogrammed to study the ring around Jupiter and the volcanoes of Io. The outcome was startling, and once again scientists were greeted with the unexpected.

Close examination of the satellite Europa showed it to be extremely smooth, totally lacking mountains or jagged terrain. Voyager I had sent photos of crisscross lines on the moon's surface; but rather than answering any of the questions about these lines, Voyager II only deepened the mystery. Images of extraordinary clarity revealed shallow, long, dark lines that one scientist said "might just have been drawn there by a felt-tipped pen." These lines might be cracked ice, but they superficially appear to be evidence of fracturing, similar to that which might occur near an earthquake fault. There is no evidence of any motion of terrain beside the cracks, however, so the nature of these lines remains a puzzle. Now called "the smoothest place in the solar system," Europa is also believed to be a very young satellite because of this lack of meteor impact cratering. In some ways, Europa appears more like what scientists expected Ganymede and Callisto to look like.

But oddly enough Callisto, the lightest of all planetary objects, bears an unexpected resemblance to the planet Mercury, the heaviest. Both are dominated by cratering; but unlike Mercury, Callisto's craters are frozen into an icy crust. The satellite's surface seems to retain craters only from bombardment of very large and very small meteorites. Moderately sized meteorites may have generated just enough heat to melt the icy crust, which filled in the craters and then refroze. Voyager II found another large surface crater with concentric inner rings, like the two such ringed craters Voyager I had seen. And the shattered, pockmarked face of Callisto is thought by some scientists to be the oldest surface in the solar system, unchanged for perhaps 4 billion years.

Ganymede was expected to be featureless, but instead Voyager II found a fractured, shattered world, sheared and faulted repeatedly, and covered with craters. Patterns of grooves, which suggest an active interior, cover younger surface areas. Darker regions can be seen, which scientists believe may be remnants of ancient crust left undisturbed by fault motions. Portions of a large system of rings have been found in older terrain, and these appear to be the result of a tremendous meteorite strike that would have "shaken up the



*Ganymede as photographed by Voyager II.*

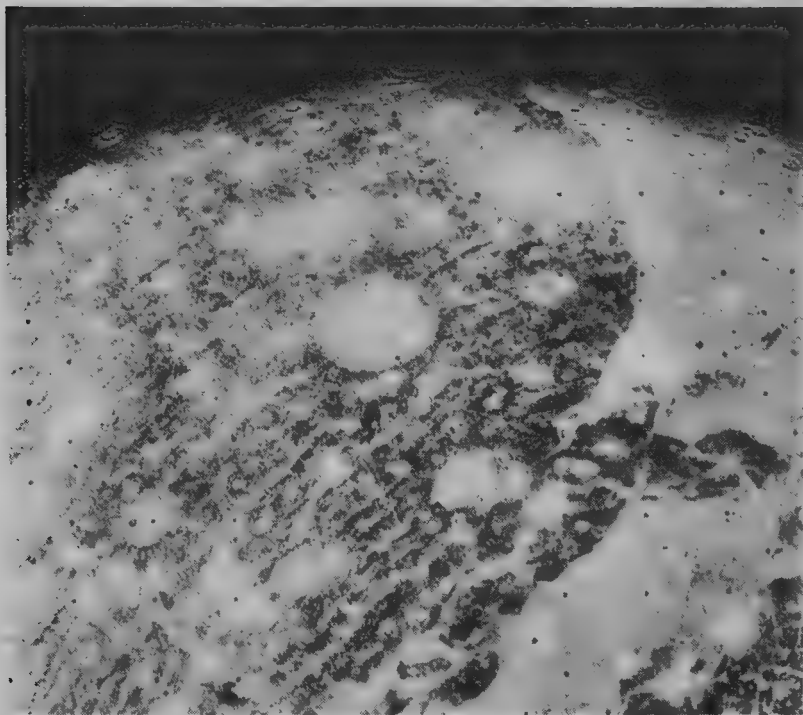
entire planet.”

Io surprised scientists once again, this time by being recognized as the second satellite in the solar system to possess an atmosphere. The discovery of an extremely tenuous, sulfur-dioxide atmosphere came as a result of a more thorough analysis in recent weeks of Voyager I infrared data. Heat radiating from Io's surface was being attenuated above the surface, absorbed in the haze in a way that is characteristic of contact with sulfur dioxide molecules. The atmosphere is undoubtedly fed by Io's volcanoes; and of the eight volcanoes found by Voyager I, Voyager II located seven of these still quite active. One image showed that the huge volcanic feature that in March appeared to be heart- or hoof-print-shaped was now shaped

like an ellipse. Dr. Bradford A. Smith, head of the Voyager photo-interpretation team, said that this change illustrated the power of Io's volcanoes to rapidly and significantly alter the moon's surface.

By far, the biggest surprise of the Voyager II encounter was the unexpected appearance of Jupiter's newly discovered ring. The blazing clarity of the ring brought to mind the planet Saturn and produced an amazement that the ring had not been seen before. And the mystery deepens; the edge of Jupiter's ring appears very crisp and sharp. Scientists can only speculate that this is due to the effect of a large satellite's gravity. Yet none of the moons exerts such an influence and no new satellite has been found in the vicinity. Measurements are still imprecise; but the width of the ring, from inner edge to outer edge, is estimated to be about 4,000 miles. There is also evidence of a much fainter inner ring that extends all the way to the planet's surface. Theories about the ring configuration are that it may be composed of mass lost from the volcanic moon Io, or

*Ganymede as photographed by Voyager II.*



# VOYAGER 2 JUPITER RING



*Jupiter's thin ring of particles was photographed by Voyager II from a distance of two million miles and  $2.5^{\circ}$  above the plane of the ring. Segments of both sides of the faint ring were captured in this photo.*

that possibly a satellite was ripped apart by Jupiter's fierce gravity pull and the debris was left to circle the planet. Composition of the ring is another puzzle. Color measurements suggest a blue tinge, which could mean small-sized particles. The particles seem to have forward scattering properties, which account for their brightness. But since the particles are small, the question remains as to how the ring has managed to maintain its existence.

The Voyager II encounter provided a spectacular close to the Jupiter phase of the mission. The Voyager Project team will be studying the data gathered by both spacecraft through next spring and then will prepare for the Voyager investigations of Saturn. Little is known about Saturn, which is twice as far from Earth as Jupiter. And scientists are already anxiously awaiting the November 1980 encounter of Voyager I, when Saturn will no longer seem so far away.



## FIRST SOLUTION TO HOW CROCK AND WATKINS CRACKED A CODE

(from page 36)

The letter T is at positions 2,3,5,7,11,13,17,19,23,29,31. These are the first eleven prime numbers.

"The primes certainly prove the virus is artificial," said Watkins. "But perhaps there's another message. The number 36 suggests a six-by-six square matrix. Let's try scanning it. We can color each cell with one of four colors, a color for each letter. Maybe a geometrical picture will turn up."

To their delight, a picture did indeed turn up. What was it? If you can't find it, see page 81.



# THE WEB DANCER

by Somtow Sucharitkul

art: Frank Borth





*In view of this magazine's notoriety  
for horrid puns and the author's  
native country—Thailand—  
it's only our dislike for  
the term "sci-fi" that  
keeps us from referring  
to this story as  
"Thai-sci-fi."*

She was poised in the pause on a leap's edge, toes nudging the rope-slack in the tight circlet of glare, pressed between a breath and its release—a girl of eleven, alone under a billion unseen eyes.

*This time—*

Nika flexed her toes swiftly for the first triple somersault of her career. She gathered in all the strands of tension and compressed them, *hard*, into a knot of neutronium deep within herself, then released it all at once, exploded outward at the ends of her limbs, *gave* into the perfect curve of the movement—

And slipped!

There was a moment between falling and fallen. A moment drawn out and still. A moment of cutting clarity. In that moment her gray eyes saw—

—image boxes slamming to the ground, lens-jewels splintering, fire cartwheeling over instrument banks, doorways dominoing over monitors and shelfstands, and—

*(It wasn't my fault I slipped! she thought. Something collided with the show satellite! There's a war going on in this system and we should never have chosen to record here but they said we were neutral and performers can't be touched because they come under the protection of the Inquest!)*

—technicians were running amok, alien uniforms of different sides flashed across the floor, bodies cascaded like flocks of birds, someone in a booming voice declaring this quadrant of space now occupied, performers with mouths open staring at the slaughter, screaming—

*(She closed her eyes then. I'm going to die! she thought, not caring anymore. I'm just going to be a chance victim of someone else's war . . . and then she wished her hair was streaming above her, not cropped to a centimeter's length, but then she remembered why she had cut it off, and she felt a yawning emptiness inside her and wanted to die.)*

—rope flopping snakelike, writhing, tangling her feet, and—

*(I don't care! she thought fiercely. I'm Nika of the clan of Rax and*

*the show never stops, never never never—)*

The vault of the show satellite cracked. Through the airshield the stars shone . . . and another ship, huge, with none of the gaudy local markings, was growing rapidly, blacking out the starlight.

*Who could they be?* she wondered, in the split second before the forceshield slapped her into blackness.

Nika opened her eyes. (*Why am I still alive?* she thought.)

"They're all dead." The voice was gravelly, the accent strange. "Don't think of them anymore. Be at peace with yourself."

Silhouettes of two men; and behind them . . . She could not tell where the room ended and where the wild dance of laser-bright lights began. Flametongues whipped against blackness! And darting between them, neckerchief swirls of purple, crimson, cerulean, cadmium-yellow, ultramarine, bursting out and fading into darkness.

. . . *We're in a starship!* For they were in the overcosm then: that other space, of strange dimensions, where *far* becomes *near*.

"Dead?" She faced her captors. *How much time had passed?* She could still feel the tightrope slipping from her feet and the utter helplessness. . . .

"Dead," the gravelly voice echoed. "We won't harm you, girl. We saved your life."

He was goodlooking, bland, overdressed; his body-jewels gleamed in the rainbow fire of outside. She disliked him at once. The other one, though: severe, old, dressed from head to foot in a single shimmercloak.

*An Inquestor!* So somehow, power was involved. A lot of power.

It wasn't the first time Nika had been whisked away from everything she knew. *I'm so tired*, she thought . . . she wanted to cry. But she knew she would not. She had vowed never to cry again.

"They are all dead, your friends," said the Inquestor, not unkindly. "Some might have survived a month or two . . . but time dilation has taken care of *them*. We intercepted a local battle to pluck you out."

"But the Inquest doesn't interfere in local wars!" she said. When that evoked no response, she cried out. "I could have *done* it!"

"Done what?" said the first man.

"The triple somersault!" she said. "The climax of my career, recorded on crystals for a billion eyes."

"Career!" the young man scoffed.

"Don't mock her," said the Inquestor sharply. "Kaz Amar, go back to your astrogating." The man bowed, departed quickly. "You're a

child yet," he said when they were alone. "Let's not hear talk of crowning moments of careers, Nika, not for another century yet."

Nika felt rage gathering inside her. *I'm not a child!* How dare they patronize her! They had taken away everything: her homeworld, her friends, the nomadic life of the show-satellites, flicking from system to system . . . and they had plucked her away from her supreme achievement.

(She felt the rope slipping beneath her feet again. She would have struck out in fury—)

Then she heard inside herself the voice of Iliash, who had trained her: *Push your rage inwards! Let it collapse like the aftermath of a nova, into a ball of neutronium! Harder, harder . . .* the voice pounded at her memory. . . .

"Nikkyeh—" the other began, consolingly.

"*Nika*. I'm not a child." How dare he presume to address her by a diminutive, when he was neither lover nor friend.

"Good, you have personal dignity, spirit," said the Inquestor, appraising her.

"Take me *home!*"

The Inquestor stood impassive. He towered over her, a darkened doorway set into the wall of light-swirls. "Nika—"

"I won't stay here! I have to get back to homeworld. If I train hard I can make the panhuman games. You don't have the right to kidnap me." But she felt her past slipping away, she saw that she no longer believed in homeworld or in herself. . . .

"Nika," said the Inquestor. "You are a Rax, and we have need of a Rax. You've grown-up thinking you're nothing special, just fit for the circus; your body too small for a warrior, your intellect too unschooled for a thinker. But you are one of the most valuable people in the Dispersal of Man. You're not ready for all this yet. You should have had more time, more training. But we're desperate."

"For what?"

"Listen. I am Ton Exkandar z Vangyvel K'Ning, Inquestor and Kingling."

"Ruler of my homeworld . . ." Blurred images of infancy whirled.

"Yes. Don't say I didn't have the right to kidnap you." He paused. Behind, fireworks burst from a sea of ink. Fire-ripples laced the darkness. *Why is he trying to justify himself?* Nika thought. Then: *He's vulnerable.* She wanted to trust him, but—

"It is incredible that we should need you!" he burst out. "That I

should gatecrash a petty war, like a space pirate, a common kidnapper—"

"But why do you need me?" She was bewildered, angry, frightened. "Did you destroy the show-satellite just to get *me*?"

"No," said Ton Exkandar, "we intercepted the local war. You *had* to be saved."

*Am I that important? I'm only a girl! What sort of game am I a pawn in?*

"And now I'll never do it. . . ."

"Do what?"

But Nika had shut him out of her thoughts. She had turned away from him; and now she watched the shifting, soundless patterns, letting them soothe her, hypnotize her. . . .

She imagined an infinite rope stretched all the way across the overcosm, and infinite Nikas, reflections of herself, leaping, upending themselves in a swift tight arc of movement, whirling down to touch the rope with the gentlest of touches. . . .

And slipping.

It was closed-loop holotape of the memory, each time no less terrifying.

How could she fight these people? She didn't know who they were and what they wanted. And she had fought too many people already to become what she was. She was tired! Drained!

"And now I'll never do it," she said, shuddering.

She would not let them put her into stasis. So there would be three subjective months in the overcosm, and there was nothing to do.

In her quarters there was one curved gray wall which could be blanked and which gave a view of the madness outside. When she was awake she lay on her pallet and watched.

They had put up a series of ranked transverse bars for her to practice on. But she wouldn't touch them. She didn't even look at them. Because they made her suspect her whole childhood had been manipulated, had been drawn toward . . . something no one would tell her about.

There was nothing to do but remember. And this she did, in the moments before sleep, or after staring herself into a trance while the colors danced. . . .

She was six and the children had all gone to war. She had run all the way from the orphanage to watch them, to stand by the wall and see the ships rise like a flock of silverdoves and cross the faces

of the far, cold suns of Vangyvel.

Mother found her weeping under a whisper tree. It reached out a furcoated metal hand to the child's brow; and the tree sang as the breezes of Vangyvel touched its flutelike leaves, a soft random counterpoint . . . "Don't cry," said Mother in its consoling mode.

"I want to go, too!"

"So you shall, so you shall . . . but right now you're too small. Too precious, too special," it said, increasing its sympathy-tones in a steep gradient with each word.

"There's something wrong with me! I know it, I know it!" She began sobbing again, with the utter, end-of-the-universe hopelessness that only children know. For a while now she had not grown at all, and her bones were thin and hollow. "I'm a mutant or something! Isn't that why I'm in an orphanage?"

"Of course not, child, you're very special, only I can't tell you why yet. . . ."

*And the froglet will become a Kingling!* thought Nika, bitter. Mother was programmed to lie to her. After all, it was only a machine. The tree seemed to copy her sobs, mocking them, the way the other children always did. . . .

"I'll never cry again!" she said passionately. "I'll do something with my tiny body that no one else will be able to do!"

"That's my girl."

"All right, Mother. Nikkyeh will go home now." They stepped toward the displacement plate and commanded the coordinates.

That was the day she had first felt the emptiness inside, yearning to be filled. And had thrown anger into it. . .

Later she threw herself into dancing the rope. She had to be good at *something*! And she was. Her sense of balance was *unnatural*, everyone said. Which was true.

She could spin like a gyroscope down half the length of a slackrope. She could do it slowly, making them blue from holding their collective breath, stretch out the tension to its elastic limits, then reverse in a flash, stifling the gasps of relief.

Rax Iliash was her teacher. They brought him in, encouraging her. He was older, about twelve or so she judged, but small too, like her. Two years he spent pushing her. He knew so much, he who seemed just a child.

The moments when she released all her anger at being different, all her frustration at not being normal, perhaps—into aching beautiful parabolas of motion across emptiness—these were her moments of joy. Finally they made crystals of her dancing, and they became

nomads. The homeless life of the show-satellites pleased Nika—what had home meant but children's mocking laughter?

On initiation, she too had received the clan title of Rax. She and Iliash were the only two either of them had ever heard of. She never took part in the initiation; the Inquestor of Judgment had merely handed the title to her. . . .

"But am I not to be tested?" She was suspicious as always, of everyone except Iliash.

Worried, overworked, the eyes had looked right through her and he said: "Daughter, you are Rax. We cannot waste you." *What did that mean?*

Once she and Iliash had gone to the zoo world and wandered around like tourists, gaping at the pseudoenvironments: the fire-snows of Ont, the methane fogs of Brekekekex, the rivermountains of Ellory, the amber skies of Lalaparalla; and the beasts: lobster-things, fire-things, cloud-things, balloon-things . . .

Two innocents, they walked hand in hand. Between the force-shielded habitats were corridors of a manworld environment.

They came to a cave where a crystal creature slept. The crowd lurched forward as it woke.

Suddenly a burst of anguish issued from the cave and hit Nika, almost physically. "Did you *feel* that?"

"Yes. Yes." His gray eyes, so like hers, were troubled. The crowd was unaware of anything; they bent down, almost touching the forceshield, murmuring "Oh, how cute. . . ."

Iliash's hands almost squashed Nika's. Waves of pain crested and ebbed. "I can't stand it!" she said. Then, crying out: "It's a mistake! That's a sentient creature! You can't cage him!"

Curious stares, laughter. She was being mocked again! She was almost fainting with the pain. Iliash pulled her and dragged her along the path, away from the crowd.

Now they reached a field, with ten-meter-high cornstalks under an ink-blue sky. Iliash was saying, "Nikkyeh, you and I have this empathy. It's one of our special things, an empathy with alien beings. You and I are *tailored*, Nikkyeh! The Inquest has some purpose for us."

She clutched him to her. But they were just two children, and nothing came of it.

Soon after the show-satellite left for another system, Nika began to train for the triple somersault in 0.5 gravity. No rope dancer had ever done it before. She worked with a fierceness not usually found in children. She had to fill the void inside her! She was hungry for



training. . . .

And so she forgot all about the Inquest's special purpose. It seemed so irrelevant. She was far from Vangyvel now; and the Dispersal of Man comprised a respectable percentage of the galaxy.

But when she was nine Iliash left the troupe.

She went to say goodbye to him. They were on a desert planet, a dreary planet of endless red sand under a sapphire sky. Iliash stood . . . strange how he had never grown at all . . . beside two tall figures in shimmercloaks. Inquestors! And behind the three—

It was a sphere. It was totally black, featureless, perhaps ten meters in diameter. It appeared to have no substance. It was as if a portion of the sandscape and sky had been blotted out, had simply ceased to exist. It was a tachyon bubble, of course. Inquestors used them to travel instantly through space. Never ordinary people. The overcosm still required subjective time of the traveler, even though it was, in effect, faster than light. The overcosm had its own overcosm, and it was through these highest planes that the tachyon devices travelled, short-cutting the short-cuts.

It was black because it was not even part of the universe. And only the Inquest could use them, because of the devastating energy waste, and because it might lend too much power to the lower clans.

Nika was afraid. *Two* Inquestors! A tachyon bubble! So Iliash had to be important, somehow.

But he was just a kid!

She looked at the boy whose gray eyes so resembled her own, who shared her clan name, whom she was about to lose forever. Would they come for her, too?

"You're all I have, Ilyeh!"

The two Inquestors moved impatiently. There was not much time.

"Ilyeh." She held his hand tight.

"Nikkyeh," he said, "I've learnt what the Inquest made us for. Now I'm going away to do what I have to do. . . ."

She raged impotently. *Push it inside yourself, the neutronium ball!* "I love you, Ilyeh," she said. (*Do I?* she asked herself.) "When we're older, if time dilation hasn't made us too far apart in age—"

"Don't talk about what can't be!" he said. His eyes looked wistful yet hopeless.

"What do you mean?"

"You and I—" He stopped suddenly, turning to see whether they were watching him. "We don't have puberty. We don't grow. How old am I, Nikkyeh? How old do you think? I'm *eighty-seven!*"

Nika chose to ignore this; she could not believe it. "You can refuse

to go," she pleaded.

"They made us too well," said Iliash. "They made us so we'll *want* to do this, they put the love of it in our bones. . . ."

"Of *what?*" she said sullenly. "There's nothing I love more than you!"

"There is, there is!" He turned to go. The two Inquestors had faded into the tachyon bubble, and one of his feet had already vanished into the blob. She felt abandoned, lied to. He was like Mother after all.

"What do you mean?" she shouted. "What is there that I love more than you?"

"That triple somersault!" he said. He blew her a kiss, wrenched himself around and leapt into the bubble. It winked out. There was no trace of it on the sand, only three sets of footprints that led to the same spot and vanished. . . . she turned away and began to walk toward the landing craft.

Now she felt truly empty. Even Iliash, whom she had trusted, had finally betrayed her.

*The triple somersault!* The cruelty of it! How could he make fun of her like this?

But it was true.

That was the day she cut off all her hair, disgusted with herself. And determined to think of nothing at all but the triple somersault, to feed all her anger to the triple somersault!

"Why don't you use the bars?" Exkandar asked, gently. It had been two months; and—abandoning her past in despair—Nika had grown her hair again. It was long now, and fiery as a bursting star.

"When the birds aren't happy, they don't sing."

"As you wish."

"Why do they all treat me so condescendingly here?" she said, sounding suddenly frail.

Exkandar said: "You're indispensable; they're not. They're afraid of you, really."

"But why?"

"You'll see."

She watched one swirl of green flame as it slowly transformed into a crazy spiral and melded into the blackness. "*You'll see! You'll see!* Do you people never tell anyone anything?"

"Nika, I don't know that you could take it yet. You're too young. I counseled against all this—"

"Well, give me a clue!"

"All right," he said heavily. "We need more starships. There is to be a war, a war with aliens. . ."

"That has nothing to do with me. Performers are neutral."

"Wait, listen to me!" *How tired he sounds!* Nika thought. "How do starships work? You should know that."

Nika laughed. "They're navigated through the overcosm," she said, "by an astrogator who is in communion with a delphinoid shipmind—" When Exkandar did not answer, she went on, "Delphinoids are giant creatures who are all brain. They're captured on . . . some planet, I don't know. They perceive the overcosm directly. They're cybernetically implanted into ships by means of . . . some crystal or other. . ."

"Yes," said Exkandar. "There are semisentient crystals that can concentrate and focus particle streams into the overcosm."

"But," Nika said, "they never told us, in school, where the crystals come from."

"And there is your clue," said Exkandar, and would say no more.

Nika thought it over. She had been tailored-gene-tailored-for empathy with alien minds, for minimal physical development. They needed starships. The ships needed crystals. *It doesn't make any sense!*

Exkandar said, "I want you to keep practicing. Use the bars, Nika." She saw them, light finger-thin poles of some flexible polymer, stretched from wall to wall in ranks of increasing height. For a moment only she wanted to rush up to them and spring into action, leaping from one to the other till she could dance on the highest pole. . . .

"No," she said. *Am I punishing them or myself?* Exkandar took this as a dismissal and left. And Nika wondered at this, that her word could command a Kingling and Inquestor.

Then, making sure she was unobserved, she flashed up in an easy bound onto the first rung, then from one ranked bar to the next as though they were steps in a pyramid. When she reached the highest one, she tiptoed swiftly along the bar, her weight hardly flexing it at all. Her mind wandered. . . .

She caught her balance. *Out of practice!* She remembered how she had fallen, and then the bar slithered from under her; quickly she grabbed with her hands and pulled herself up again. . . .

*Oh no. They've ruined me.*

There was a new kind of queasiness in her stomach. *I'm afraid!* she thought, startled by the new emotion.

§ § §

In a few days they reached a nameless planet that intersected a nexus in the tachyon universe. It was a blizzard-swept place, without inhabitants save for the nexus station crew, all of the clan of Nartak, another one Nika had never encountered.

The two of them came down in a lander to await their tachyon bubble. High overhead, it materialized, blotting out more and more of the snowburst as it descended, sinking through the domeroof as though it were thin air. There was a humming; another Inquestor, also in a plain shimmercloak, emerged from the black blot.

Disappointment showed on the stranger's face. "Only one?"

"We could trace no others," said Exkandar quickly. "And this is a youngling of eleven."

"It's a catastrophe!" said the visitor. "Come, both of you." To Exkandar: "Is she prepared?" He toyed with his shimmercloak.

"She doesn't know anything," said Exkandar. "The circumstances of her presence with us were . . . traumatic; I thought it best—"

"Yes, yes." He blotted out. Exkandar pushed the girl ahead into the bubble; once inside she could not tell she was *inside* at all. They moved, suddenly, into the air, and Nika felt no excitement or wonder, only the same deadness she had felt since her capture. But just before they blinked out—

*This is where they took Iliash!*

She closed her eyes and remembered his face, as though she were looking into a mirror: the eyes that reflected her own, the boyishness that, she now knew, concealed long experience.

She smiled . . . for the first time since the attack on the satellite . . . and clutched the memory of his face to her, determined never to let it slip.

Bleak. Gray. Bleak. Gray.

It was an impossibly tiny planet, with a horizon that dropped too soon, like an asteroid's; its diameter was only fifty kilometers. There was a core of neutronium, the size of a wine-goblet perhaps, denser even than the degenerate matter of white dwarfs, they said. Or perhaps a seething soup of quarks, or perhaps compressed all the way into a black hole . . . whatever it was, it gave the planet a surface gravity of 0.78.

She hated the planet!

It had crazy naked crags, gray and featureless, that erupted out of gray, mirror-still lakes. The sky was gray too, an even, impenetrable gray like Iliash's eyes, like Nika's eyes.

Nika and Exkandar hovered in the floater over the mountains.

"It's artificial, this planet," she said. It was obvious. But instead of wondering at it, she detested it.

"Yes," said Exkandar, "but not built by us. Not by humans. By a race long extinct. A world built to order, built for the breeding of the tarn crystals. We haven't worked out every variable. We can't duplicate what this world does! The neutronium core, for instance—we don't know how vital that is. If it is, we can't replicate it at all."

The floater swooped toward the frighteningly close horizon, whipping aside to avoid the crag. Nika heard a quiet rumbling, almost beneath the threshold of hearing. "What's that sound?" she asked. And felt herself *drawn* to the sound somehow, attracted by it. . .

"The mountains are in heat."

"Oh." The two days she had spent here had only compounded her bewilderment. Something brushed her face. She started to strike out at it in annoyance. . . .

She looked up to see a monstrous butterfly, with a wingspan of perhaps a meter, hovering ahead. She let out a little scream, more in surprise than fright.

The animal hovered. The resemblance to a butterfly was only superficial, she saw. It had uncountable tiers of wings, each paper-thin and translucent, refracting light into a thousand colors. There were two legs, crystalline and muscular at the same time . . . and a small, oval head with six or seven eye-like organs. From the head sprouted paper fans—they looked like fans—that glittered intermittently as they caught the light . . . the wings moved, vibrated faster than the eye could see; and then were suddenly still as a wind sprang up to support the creature. The fans rotated nervously, catching at sunlight; there was little of it here, for the sun was perpetually hidden in veils of gray cloud.

The creature watched the floater and its occupants for a long time. They were buoyed up by the same air current.

*Angel*, thought Nika, *faery, creature of myth* . . . her heart almost stopped beating. Something in the void inside her responded to it. . .

Suddenly the creature shivered all over, spread its wings, vibrated them, a shimmering aurora of lights splashed across the grayness, a whirl of wings, a dazzling soaring into the cloudbanks that left an afterimage like the ghost of a rainbow. . . .

*So beautiful!* "If only I were like it," she said, "and not trapped the way I am."

"It is a farfal," said Exkandar. "The farfellow are the larval forms. . . ."

"Of what?" she said as they rounded another precipice and skimmed a lake of deathly stillness.

"Of the tarn creatures."

"There are beasts, then, living in the mountains?" She tried not to sound too interested, but in spite of herself . . .

"No. They *are* the mountains."

Nika whipped around in panic, upsetting the floater for a moment. She saw the torturous crags, straddling the horizon, twisted shapes that strained toward the ashgray cloudveils. . . .

"Whoever built this planet was far superior to us, in technology, in bioengineering . . . tarn crystals, the things that focus the minds of delphinoid ships, are the unfertilized ova of these mountains," said Exkandar. "The adult forms are static, vast, silicon-based; photosynthesizing silicon chains from the gray sunlight and from the silicate-rich crust, the salts dissolved in the lakewater. Perhaps their roots even reach down to the neutronium core—there are unsolved anomalies in its particle emissions—and draw on its energy. We don't know exactly how it works, just that it's a very lucky thing for the Dispersal of Man, a secret stumbled on many millenia ago which has kept the human race in contact with itself, which has stabilized and enriched our culture. . . ."

*So that's how the Inquest keeps control of the Dispersal of Man,* thought Nika. *And it's such a precarious secret, too. They're so vulnerable. Without the crystals, war and commerce would both cease.*

*But what does it have to do with me?*

"The clan of Rax . . . we are collectors of tarn crystals, then?" she said. *It's humiliating!* she thought. *To scrabble in the rocks, when I could have been the Dispersal's greatest rope dancer.* It didn't sound possible.

"Let's float onwards." He blinked, and Nika knew that he was keying the floater by means of a brain-implant. Soon they soared above the lake and swerved around a peak, with the horizon gaining on them. . . .

They reached a plateau encircled by a wall of stubbier mountains. A flock of farfellow swooped by the mountain-face and swung upwards, in a perfect arc, like a necklace drawn up by an unseen hand.

The floater came to rest near the edge of the plateau and they stepped down. The rumbling came again. "Is that what you meant, when you said the mountain was *in heat*?"

"They have cycles. Now look ahead of you."

Nika obeyed him. For a moment she had forgotten she was a prisoner, destined for an unknown and probably unpleasant fate.

Gray statues of farfellow stood on the plateau's edge, staring out over the emptiness at the ring of tarn creatures. Nika went up and touched one, tentatively; its touch was cold as marble. Now two or three farfellow, circling overhead, swooped down in a wild glittering and landed beside them, and stopped moving. As she watched, veins of grayness grew and spread across the color-lattice of wings, across the crystalline legs—

"They're dying!" she gasped.

"No, metamorphosing . . . in a few years, a century perhaps, another tarn creature will grow here. There is an active phase of reproduction. After that the mountain is quiet, and never moves again; it might be dead or dormant, we don't know. Are they sentient, Nika? You were bred for empathy with aliens. . . ."

She listened for the cries of other minds. But she could not tell. There could have been a voice, but it was a murmur so distant that it might have come from another world. "I don't know."

"None of you ever know, for sure."

*What an alien world!* And she was so alone in it. She pushed ever harder at her fear, hoping it would contract to nothing. "But where are the other Rax? Where is Iliash?" She knew he was withholding something. "Why us? Do we have to die to get your precious crystals out of the mountains, is that it?" For a moment Nika longed for the touch of Mother's fur-covered iron hand . . . *but I mustn't be a child!* she thought. *Must fight . . .*

"It's hard for me to tell you, little one. We Inquestors," Exkandar paused, choosing his words, "are above all compassionate; at initiation we are selected for this trait. I can't bring myself to—"

What could it be that upset him so? Nika could imagine only death. Panic pounded at her. She sprang up and bolted for the floater. When she reached it he had already caught her.

"No, it's not what you think!" he shouted. "Come, let me finish what I have to show you." And again he seemed so vulnerable that Nika felt for him; though she knew that she was the victim, not he.

Some forty kilometers on there was a peak, especially huge, going right up through the clouds. They flew into a small building, open on three sides, built into the foot of the mountain; steps were carved into it, and there were others houses, a small village. People—guards or workmen—in blinding bright tunics, were milling around the hallway. When they saw Exkandar they bowed; when they saw Nika they gaped.

At the end of the hall there was a tiny passageway, circular, maybe a meter wide. It led to total darkness.

*It's a tunnel!* she thought. *They're going to force me in there and make me dig around for the eggs. . . .* "You can't make me go in there!" she said, hysterically. "The other Rax are lost in the tunnels, aren't they? You bred us small to make us live out our lives in there? I won't do it! I'm a rope dancer, I need the open—"

Exkandar stared at her incredulously, then burst out laughing, for the first time since she'd known him.

One of the workers said quickly: "Lord Inquestor, she doesn't know?"

The mountain rumbled a little. The workers fell on their knees and seemed to be deep in prayer.

"They don't know the truth," Exkandar whispered to Nika. "They worship the tarn creatures. They're the egg-collectors, they gather them as they roll down the oviducts—that what the tunnels are—and they'll worship you, too! We've set it up as a religion to conceal what the eggs really are. . . ."

"Then what is my rôle?" Nika was exasperated beyond endurance. "What happened to Iliash? Didn't you bring a Rax named Iliash here?"

Exkandar took her by the hand. "I'll show you now."

At the entrance they boarded the floater and wafted upwards, following the gradient of the tarn, hugging the surface. Nika strained to see some crack, some irregularity of color or texture. There was none; it was all one gray.

They glided on to a perch of the cliff-face. The Inquestor jumped off and motioned her to look. At first she saw nothing—

Then—

Growing out of the cliff edge, flung out taut over the chasm till it disappeared into the grayness, was a tightrope. Nike ran to the edge, got down on her knees and leaned over to touch it. It felt . . . made for her. The slackness of it was just right, the pressure just enough. A stadium out in the wilderness, on an unnamed planet!

Something inside her responded at last. She yearned to walk the strand. . . .

Her eye ran along the rope, and she saw faint lines alongside it, crossing over it, above and below . . . mostly, the lines were invisible, until the light fell just right, until the wind tugged gently on them.

She put one foot forward, and remembered—

(Rope slipping from under her, wild vertigo of burning machinery and people aflame, whirling—*I've been kidnapped! I should be angry! I shouldn't do anything they want me to do!*)



And fear. The fear that had come to her for the first time, unbidden, when she had tried to practice again on the ship. She tried to swallow it up, kneeling down and caressing the rope, pulling at the tension. . . .

Exkandar explained. "These strands are the tarn creature's nervous system. When it is in heat, the larval forms . . . and you . . . will feel it calling you; the farfellow fly over and dance lightly on the strands, stimulating the sleeping mountain . . . after a while, sometimes half an hour, sometimes half a day or more, the eggs are released, one by one, sliding down the tunnels to the oviduct-mouths. The dancing farfal sends out empathy-signals all over the planet, and thousands of farfellow flock to the tunnel mouth to fertilize the eggs, making tempests with their wings, breaking the sides of the mountain in their urgency. . . .

"And after, they are too exhausted. They have spent everything; their fertilizing fluid, their reserves of energy—for farfellow do not ingest—and with their last strength they fly to a plateau, become rooted and dormant, await the next stage of their cycle. Thousands of them will eventually merge into a single mountain—"

And suddenly, Nika saw what he was driving at. "I have to dance on the webstrands!" she cried out. And it came to her at once, how she had been manipulated at every stage in her life.

"Don't blame us, Nika!" Exkandar said, anguished. "If there were another way we would have found it. But we need *unfertilized ova*! And if the dancer does not send out signals to the other farfellow, the eggs are not fertilized. We tried using robots and androids and altered animals . . . but nothing works except a human being, reacting to impulses given off by the alien mind, small, perfectly in control of his body—"

"Can't you slaughter them as they attack the mountain? Can't you set up forcesshields?"

"The mountain senses if there are any obstacles to the eggs reaching the air freely. that's why the temple is open on three sides. We tried braving it out, assaulting the storm with missiles and projectiles. But often the eggs would be damaged, their crystalline alignments warped; and usually one farfal would get through And one is enough to fertilize them all."

Bitterly, Nika said, "And when we've danced on the ropes, and given you your priceless eggs—what then? Do we die? One day, do we fall off? Do we slip?"

"Accidents are common. I won't lie to you. And it is necessary to keep the number of Rax small and separated from one another, until

they are needed . . . and now you are the only one. You see, the farfellow . . . *compete* with the web dancers—”

“I have to fight them off?”

Those beautiful creatures were deadly then! They were her enemies. . . .

Exkandar was silent.

“And what happens afterward. . . ?”

Nika saw that he was disturbed; she knew that there would be more, and not pleasant, information. Furiously, she turned away from him. How cleverly they had trapped her!

She looked over the precipice. Now that she knew what to look for, she could see many of the strands, silvery-white, criss-crossing one another in strange, irregular grids, stretching out to invisibility.

“I won’t do it! You can’t force me!”

(“There *is* something that you love more than me!” Iliash had said.) The ropes shifted and swayed in the soundless breeze. *I want to! I want to!* her mind cried out. *I could tiptoe out, ever so lightly, I could press my feet in and spring up, high, high, high, do the triple somersault, here, hovering over the emptiness—*

“Curse you, Inquestors!” she said. “You made me too well!” And she trembled with longing and revulsion.

“Yes,” Exkandar said.

Built on stilts over the largest lake, the House of Rax must have been able to house a hundred or more web dancers. Nika was lost in it. Even her private room was as large as a moonhopper.

She threw herself into practice, which was in a varigrav gymnasium larger than the whole show-satellite had been, with silklike strands stretched over a protective forceshield. She was too immersed to notice the empty corridors hung with imagesongs and lightmobiles, the tape libraries smelling of overscrubbed disuse. But she had time to ask questions.

To become angrier.

She needed that anger, as fuel for the web dance. She had no love, no hope. Anger was all she could dredge up from inside the great emptiness.

She learned that the Rax were cloned (in both sexes, purely a cosmetic difference) from a centuries-old blueprint tissue, and that they were released into orphanages one at a time in worlds as distant as possible from one another; that a recent radical mutation of the tissue culture had almost wrecked the system, that samples had been taken from her in her sleep to rectify and perpetrate the system.

That explained partly why she was the only one there now; also, there had been a rash of accidents. The Inquest was desperate indeed.

The mountain god took its toll in human sacrifice.

She learned that replacements for her were being tracked down all over the Dispersal of Man, and that after this breeding season she would be free to leave. Not because of charity.

She would be burned out. Her empathy-circuits would be ruined. Web dancing made a ruin of the mind and the body . . . but they would let her go. She could be a dancer still . . . with a different set of memories.

They would destroy her memories completely—not just the planet, the web dancing; but everything, just in case. Yes, she would truly be free.

Or dead.

But perhaps Iliash was out there among the stars, a ghost of himself with a different personality . . . and Nika became angrier. *I'll dance for him! she thought. I'll make him see me!*

*If I'm angry enough I won't be afraid.*

In her mind she tumbled again from the rope, she heard the screaming and saw the fire flash. Iliash had told her: *Anger is good. It's the next best thing to courage. But push it all inside you, coil it up so it'll rush out when you need it most.*

She tumbled in the gymnasium, too, on to the springy forceshield. *It's hopeless, I'm not ready.*

She learned that they had tried to set up a forceshield under the tarnweb, but the mountain had not been fooled. It had sensed an irritation in the environment, and the ova had not come.

She became angrier.

They implanted fingerlasers on both her hands and keyed them to subvocalized syllables. Now there were sounds she could never even *think* again. For hours she danced the high ropes, flicking death at farfal-robots. She learned very fast. Of course: she was made that way.

In her room she lay and gashed the walls with the fingerlasers, and when she came back the walls would always be repaired, unblemished as before. She grew angrier then, and in between practicing she lay and brooded.

Beyond her fear of slipping, beyond the anger—she saw herself, running free on the highrope, whirling against the wind, her body a perfect song of curves and arches, a still hurricane-eye of the wild elements. . . .

*It's not just the thought of slipping, she told herself in the darkness before sleep. I'm not a cog in their machine! I hate them for making me want this, for manipulating me this way! I want it to be just me!*

But she had sworn never to cry again, that time so many years ago. And she had never broken that oath. So she swallowed everything and woke up knotted with anger.

A few weeks later she found a holosculpture library in a circular room where half the wall could be deopaqued to show the lake that curved and dipped so abruptly into the mountainpeaks. They were both so gray, she thought, the landscape outside and the silver walls inside. No wonder the workers wore such dazzling colors. She watched the lake; it never rippled, but cast a perfect echo of the gray sky.

*I'm almost angry enough—*

A worker, in crimson-and-blue swirled tunic, was waiting deferentially. "May I help you, little miss? I am Ynnither, librarian of the House of Rax. The computer indicated you were here."

Nika was annoyed that her solitude had been broken so callously. "I have to be alone! I'm going to break my skull on the rocks, for the sake of the universe or something, and I can't be alone!"

"Is there something you would like to see, a particular holosculpture? Before there was so much work—"

Perhaps he could tell her something. "What about *before*? You have holosculptures of the others, of the Rax before me? Of a Rax named Iliash?" For a moment she panicked, dreading what the answer might be.

There was a rumble—

"There now, miss, that'll be the big one calling for his mate," said the worker. "It'll be your time soon."

"... Iliash?" She was adamant.

Ynnither said, "I remember him all right. He was the daringest of them all. To the last he was daring. Cocky. A legend to us."

"Show me."

Nika heard the hum of machinery, and the view-walls opaqued. He appeared in mid-air, about a meter from her face, suspended in mid-leap. His hair floated above him, caught in that moment.

She walked closer to the holosculpture, ran her hand through emptiness. How she longed to be part of that frozen moment. . . .

The gray eyes looked back, full of defiance.

"We have the sculpture in kinetic too, miss," said the worker, and turned to adjust the machinery.

All at once Iliash finished his leap, in the middle of the emptiness, in one impetuous curve. Nika thought, *Not as refined as I would be. But how achingly beautiful!*

He vanished, leapt again, vanished; leapt again—with the play-back in the kinetic mode, there was wind in the picture, ruffling the waves of hair; and as he landed the face broke into a smile at once triumphant and fragile.

"He was your friend, miss?"

*Was?* Realization shot through her, and she felt outrage . . . outrage . . .

"He was the greatest web dancer we have had. You should have seen him in life! We often watched on the monitors in the eggroom. He's dead now."

She stared at the leaping figure till her eyes burned.

"A farfal got him, miss, on the very day he was scheduled to return to his homeworld. He needn't have danced the web that day; they'd told him it was enough. But he was wilder than usual, ran like an animal across the ropes—how we mere mortals envy your powers!—and then he shouted, *I'm going to try for the triple somersault!*' And he stood on the rope and steadied himself for a tremendous leap. The farfal swooped down and dislodged him. They never found all the pieces."

*So you're dead!* she thought. Blood was on her hands and she realized how hard she had clenched them. *Control your anger, roll it into a secret place inside you so you can throw it into your leap—*

And Nika knew that she was ready. The rage had built up inside and was ready to explode. The void inside her was full.

The rumbling came again, and Exkandar was standing beside her. "You must come now, Nika. The mountain is calling for you. . . ."

In the back of her mind she felt an alien presence, tugging at her, hungry and passionate. She did not have to be told what it was. She had been bred for empathy with aliens' minds. It was the call of the tarn-creature to all the farfellor. Then they deopaqued the wall and she saw the mountain peaks jutting out over the lakeface, and her heart gave a funny leap and she let out a cry. And understood the ugly, dissonant rumbling . . . it was a song!

And she felt tears rushing. Choking them back, she said, "I can't help what I am, after all. Even after what you did to Iliash, the only person I've ever loved, and the others."

"Come!"

"Did you think this would make me feel like a superhero in a

kid's holoplay, rushing in to save the Galaxy from the evil aliens?" she said, exulting. "I'll dance the webs—but not for your precious ships. I'll dance for Iliash, who died for my somersault. I'll dance for the perfect leap! I'll dance for ME!" And she was proud of what she was, and of her importance.

And she looked the Inquestor—a Lord of the Dispersal—full in the face, and saw . . . humility. And pited him at last.

The rumbling called her, thrilling her. She saw flocks of farfellow, responding likewise, flashing across the sky.

And, against the mountainpeaks and the steel sky, the ghost of the boyfigure with the bright gray eyes tumbled and leapt, tumbled and leapt, over and over, with consummate grace.

After about twenty meters Nika opened her eyes.

She had been testing the web's tautness. With every cautious step she had felt the strand bend itself, accommodate itself to her weight. It was a thing alive, that strand. Not like the lifeless ropes of the show-satellite, which her own body gave life to. Here was a rope she was almost in communion with . . . but she did not trust it, not quite yet.

She looked. Below was Exkandar on his floater; if she tumbled, he would catch her if he could. There were other webstrands, their ends lost in the grayness. The grayness was overpowering. Space and distance were swallowed up by it, so that she seemed suspended in mid-nothingness.

*Love me. Love me. Leap for me. Dance for me.*

It was a voice not quite sentient that sang in the back of her mind, more the voice of an animal in need, broadcasting distress signals. "You poor mountain," Nika whispered. "You're just a pawn in their game, like me. Yes, I'll dance for you. . . ."

She took a tentative leap forward, landed lightly on her right foot, spun around.

*Love me more! More!*

The voice tugged at her, yearned for her . . . she whirled once, twice, each time leaning harder into the silkstrand, catching herself miraculously just at the instant she would have tumbled.

"That's right, Nika, slowly, cautiously," prompted Exkandar's voice, reaching her via a head implant. She shrugged the voice off contemptuously. They didn't know anything, these people who used the tarn-creature's eggs to control the Galaxy. Right now there was only her and the mountain, alone together.

A light wind sprang up. She took four more steps, then narrowly

avoided a tumble, overcompensated for the wind, almost tripped again, flung out her arms wildly and steadied herself in a moment. Above the rumble came a high whistling, mixing with the wind sounds.

She looked up, pushing down harder with her toes and keeping her arms outstretched for the balance. A flock of farfellow broke through the cloudveils, a dozen or more of them, swooping, converging on her—

*Mustn't panic—*

(She remembered the rope slipping from under her over and over but the whisper of the mountain touched her, calmed her. . . .)

*Dance more, dance more, why do you stop?*

The fighter convoy moved in to cut them off. About fifty meters above her head, a projectile volley exploded the flock into wild flurries of color. The farfellow screamed, a heartrending highpitched keening that became part of the whistling wind. *Poor creatures*, Nika thought for a moment. *Sacrifices.*

*But I'm going to ignore Exkandar and the farfellow and the Inquest and the fate of the Galaxy now. I'm just going to leap high, leap perfect, leap*, she thought.

*Leap for me, love me!*

Impetuously, she cartwheeled across to the next strand, ran swiftly along it, leaping back to the first strand, making singing arcs in the air.

("For the sake of all of us, play it safe, girl!" she heard Exkandar say. And laughed at him. . . .)

One of the farfellow had not been killed. It hovered over her, vulturelike, waiting. Nika ignored it, until it swooped down and knocked against her face. Angrily she whirled round and bisected it with her fingerlasers, watching the iridescent pieces fall forever into grayness. . . . She turned back to the web dancing, feeling the pull of the mountain, *loving* the mountain.

Suddenly the sky was alive with the flapping of farfal wings! A sea of colors crashed across the sky, and the convoys were everywhere, slaughtering. Farfal bodies plummeted like rain. Projectiles zinged and boomed.

Nika closed her eyes, reaching for the strands with her nerves, with her mind—

And leapt up, somersaulting! In her mind's eye Iliash turned with her. Her feet touched the strand and she steadied herself with relief. She laughed again, feeling the mountain's joyous response. And whirled again, arms out, like a top, with the wind flushing her face

and her hair flying.

*I think I can do it—*

A shudder went through her, a release of rapture, thrilling her. . . .

The mountain was giving birth! She knew it, she could feel with it, she could feel the eggs falling down the long tunnels toward the foot of the mountains.

"You've done it!" Exkandar cried. "We'll come and get you now—"

"No!" she cried. "I think I can do it." "Do what?" She saw the floater climbing up after her. She ran along the web, further out into the emptiness, using the bounce of the web to propel her even faster. . . .

And then, in a moment when she found herself quite alone, she wound up all her anger and all her love, everything that was ever pent up in her slight body, and *compressed* it into a core of neutronium and then exploded, hurled herself upwards—

*Iliash! You should see me now!*

—defying the planet's pull, higher than she could have thought possible, and somersaulted, with the world and the farfel colors kaleidoscoping about her eyes and the windstream burning her—

*One—*

*Two—*

*Three—*

And touched the web, giddy with triumph and joy.

"... all right," Exkandar's voice was saying. "Don't move, we'll come for you. It was a fantastic crop. You've done well by the Galaxy. . . ."

She laughed again, a peal of laughter that scorned Exkandar and all his kind. "I've done well by me!" she shouted, her face flushed. "I've done the first triple somersault on a rope *ever*! I've danced free under the open sky with the wind singing and the mountain loving me. And I'll never forget this! I'll show you! You can erase my memory, you can discard me like another used-up tool, but I won't forget! Not ever, not if I live a thousand years!

She had come to the arena again, a grown woman still shaped like a girl, to dance the rope dance. It was the Highfest of Vangyvel—which, they had told her, was once her homeworld—and it was the nameday of the Kingling Exkandar, who would actually deign to attend. But this meant nothing to her. She stepped onto the slackrope.

There was no forceshield. She despised safety. . . .

The tiers of crowd rose to the roof of the dome. In a breath darkness



fell, and she was alone in a pool of light.

She danced. She danced with a kind of crazy joy, a wildness that always drove her audience to a frenzy. But all this was routine; the climax was yet to come.

She did some dazzling footwhirls; and then, suspended only by her feet, twisted her body up the length of the rope, accelerating to the music. The crowd was deafening now, the waves of sound egging her on, pounding at her. . . .

And then she stood in the middle of the nothingness, prevented by a thread from abrupt death. She stood frozen for a long while, while the crowd grew silent, pondering.

Her eyes fell on the royal pew, and met the eyes of Kingling Exkandar, aloof, his Inquestral shimmercloak topped by the iridium crown.

*Odd, she thought, that face . . .*

And she closed her eyes in the ritual of the triple somersault, imagining herself away, far away, on some made-up, impossible planet:

*Gray lakes, still as mirrors . . .*

*Colors, sluicing the gray sky, threatening . . .*

*Wind, caressing her . . .*

*Mountain peaks, jutting from a too-near horizon . . .*

(What was the memory? From what scene in her sketchy past had it come? It would always come to her before the great leap. She seemed to remember that once, ages ago, she had filled the void inside her with anger, not love. . . .)

And she pressed her body like an arrow into the bowstring and sprang upward, as the wind whistled and the creatures like butterflies flashed against the alien sky—

She landed. The crowd's silence broke into thunder. The strange planet retreated into her unconscious. She had been perfect.

*Perfect!*

As she looked out at the crowd, only a trace of the phantom memory lingered, a voice not human, crying out for her compassion—

*Love me. Dance for me. Leap for me. Love me.*



## SECOND SOLUTION TO HOW CROCK AND WATKINS CRACKED A CODE

(from page 55)

If the square matrix is taken left to right, and top to bottom, the DNA message fills it as shown below:

G	T	T	A	T	G
T	C	C	C	T	C
T	C	A	C	T	C
T	C	C	C	T	C
A	C	G	C	T	C
T	G	G	A	G	A

Note that the C letters, when shaded, depict the initials A.I.

"Curiouser and curiouser!" exclaimed Crock. "What does A.I. mean? Artificial Intelligence? If so, it might be a way of saying the virus was made and sent here by robots? But how could they know our English alphabet?"

"I just had a thought," said Watkins. "Scanning left to right is no more than a cultural convention. Both letters are mirror symmetrical. If we scan the same matrix right to left we get this." Watkins quickly sketched the matrix, lettered its cells, and shaded the Cs to produce the following:

G	T	A	T	T	G
C	T	C	C	C	T
C	T	C	A	C	T
C	T	C	C	C	T
C	T	C	G	C	A
A	G	A	G	G	T

"So what does I.A. stand for?" asked Crock. "Isaac Asimov?"

The two men spent several days testing the sequence for other clues, trying matrices of 2 X 18, 3 X 12 and 4 X 9, scanning them in different ways, but no other patterns or number sequences turned up. A few weeks later the entire mystery was unraveled. Turn to page 118 to find out what had happened.

HOW TO ORDER—IT'S SPANKING NEW!

ASIMOV'S  
**SF Adventure**  
Magazine

380 Lexington Avenue New York, NY 10017

Check full of stories with lots of illustrations—  
the Fall '79 edition will provide you SF excitement and fun!

- ☐ Enclosed is \$1.95 plus 45¢ handling/shipping  
(total of \$2.40) for the Fall '79 issue (#4) of  
**ASIMOV'S SF ADVENTURE Magazine.**

Name \_\_\_\_\_  
please print

Address \_\_\_\_\_ Apt. No. \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_

FOR MORE DETAILS SEE AD ON COVER 2

IASFM129

HOW TO ORDER—ISAAC ASIMOV'S SCIENCE FICTION ANTHOLOGY NO. 2

(See Cover 3 of this issue for a picture of the Anthology)

That's right, if you missed some of the first issues of ISAAC ASIMOV'S  
SCIENCE FICTION MAGAZINE, you'll enjoy this superb collection of 16  
stories by the masters of science fiction.

TO: ISAAC ASIMOV'S  
SF ANTHOLOGY #2  
380 LEXINGTON AVE.  
NYC NY 10017

- ☐ Enclosed is \$2.25 plus 65 cents handling/shipping (total of \$2.90)  
for Asimov's SF Anthology #2

IASFM129

Name \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_

# HORSE LAUGH

by Pierce Askegren

*The author is 23, single, and has a BA in communications arts. While "Horse Laugh" is his first straight prose sale, he has sold some scripts to Warren Publishing Co. for their line of black & white comics.*

Sirius III turned out to be occupied by a race of intelligent horses, who were not at all opposed to the idea of a Terran colony being established on the planet. After some negotiation with the principal herds, the humans were allowed a large tract of land which, while adaptable for their needs, was unsuited for grazing.

The first stumbling block in human/equine relations came in the colony's third year, just after completion of the fusion power reactor. Almost immediately, one of the neighboring herds lodged a complaint. As specified by treaty, the mayor of the colony met with a representative of the distressed parties. The ambassador was a large stallion of a handsome reddish bay color.

"I don't understand the nature of your complaint," the mayor said. "We have included every possible safeguard on the power plant. There is no way it could be interfering with the ecosystem, yet your complaint calls for the immediate dismantling of the reactor."

"On the contrary," the horse replied, "Your machine interferes with traditional activities of my people. As your scientists have explained it to me, the device uses intense magnetic fields to convert one colorless gas into another colorless gas, releasing energy in the process." The speaker paused.

"Yes," the mayor said, "The process is called 'pinchbottle fusion'."

"These fields interfere with the nervous systems of my people, so that recreational cantering on our own lands has become a disquieting experience. We wish this to stop."

It took a few minutes for realization to dawn. "Oh, God," the mayor said, "You mean—?"

"Precisely. Strolling roans rather no gauss."

# ON SCIENCE FICTION CLUBS

by Darrell Schweitzer

art: Tim Kirk



What, some of *IA'sfm's* readers have been asking of late, is a science fiction club? How do you find them; and failing that, how to you start your own?

A science fiction club is, first of all, not commercial. It isn't one of those things promoted by a publisher or moviemaker to which applicants send a sum of money and get back membership cards, secret decoder rings, photographs, and a monthly newsletter perhaps. A *Star Wars* fan club along those lines does exist, and it is perfectly worthwhile for *SW* enthusiasts, but it's not what we are talking about. A science fiction club is a *social* group. The members meet in person, not through the mail. While certain SF correspon-

dence societies do exist (notably The National Fantasy Fan Federation), this is not what we are talking about either.

A science fiction club or society may have anywhere from a dozen to over a hundred members, the average being perhaps about fifty who are active. They exist in most major American cities and in many European ones. In many cases the group may consist of an informal circle of people interested in science fiction who meet regularly either at one another's homes or in a local restaurant or pub. Arthur Clarke's *Tales From The White Hart* fondly immortalizes a British club of this nature. The informal variety may or may not advertise its existence. Some of those which meet in members' homes are strictly invitational. How do they persist, you might ask, if it's so hard for newcomers to find them? The answer is that usually they have evolved from or splintered off of a more formal organization.

This second variety is more readily accessible when you don't know half the people already. A few, like the Los Angeles Science Fiction Society, actually have clubhouses. Others, like the Philadelphia Science Fiction Society, rent rooms in public buildings. (PSFS and LASFS both date from the 1930's and have been cordially feuding for decades over which is the longest continuously active SF club in existence. The contention is over what "continuously active" means. World War II caused the definition to be stretched.) Commoner of late is the university-based group, which doesn't necessarily consist entirely of students, but obviously has to retain a few in order to use school facilities. Such formally organized outfits tend to have elected officers, and they may even conduct their business by parliamentary procedure. Usually their meetings feature organized programs, such as panel discussions, talks by professional writers or editors (or anyone else of interest—scientists, filmmakers, artists, and perhaps somebody has gotten an astronaut by now), or films. The informal gab-fest comes afterwards. PSFS will adjourn to a nearby restaurant for this purpose.

A formal club with identifiable officers and a treasury is more likely to sponsor science fiction conventions. Virtually every 'con' has some group behind it, this being more convenient for everybody. Hotels would rather negotiate with a fixed organization, and it helps to have a little front money and a membership from which to draw volunteers to do the work. (For more on this, see the article "What Really Goes On At A Science Fiction Convention? *IA'sfm*, Aug. '79)

Years ago, clubs were more likely to publish fanzines (amateur magazines of and about science fiction, published by fans) than they

are today. Because the overall social world of science fiction was much smaller then, various functions tended to be concentrated on them. LASFS published *Imagination!* and later *Shangri L'affaires*, affectionately known as "Shaggy." PSFS published *The Variant*. Today individual members may publish fanzines, but it isn't usually an official activity. The frequently given reason is that the work always falls on the president, who becomes *de facto* editor. Anyone who wants to publish doubtless will, so there's no need for anything further. An exception to this generalization is the Washington Science Fiction Association, which has been giving us *WSFA Journal* for many years now.

How did all this get started? During his sojourn in New York in the middle 1920s, H.P. Lovecraft belonged to something called The Kalem Club (coincidentally, all members' names began with K, L, or M) which would certainly be recognized as a part of science fiction fandom if it existed today. The members, some of whom were fantasy writers like Lovecraft and Frank Belknap Long, met in one another's homes for long discussions of topics of mutual interest, often including what we would today call science fiction, although the term had not yet been coined. (It must not be assumed, by the way, that science fiction is the *only* thing ever talked about in contemporary SF circles, although the subject does tend to come up rather often.) Members of the Lovecraft circle even published periodicals which would today be recognized as fanzines, notably W. Paul Cook's *The Recluse* in 1927, but the group did not continue after H.P.L.'s death. Old friends from those days still keep in touch, but there is no continuity between something like the Kalem Club and even modern Lovecraft fandom.

*Amazing Stories*, the first English-language science fiction magazine (there was a German-Austrian one called *Der Orchideengarten*, 1919-21), appeared in 1926. For the first time this kind of writing was clearly identified as a genre, and for the first time enthusiasts could focus their attention in one place. And focus they did, in the *Amazing* letter column; and they got to know one another that way. Before long, a club was inevitable. According to David Kyle's *A Pictorial History of Science Fiction* (Hamlyn Publishing Group Ltd., 1976), the first true one was the Scienceers which held its first meeting December 11, 1929. There were seven members, six of them in their early teens, the other, in whose home the meetings were held, about thirty. The previous observation that all fan functions tended to be concentrated on a club in those days is borne out by the fact that the Scienceers published the first fanzine, *The*

*Planet*, starting in 1930. After that, things grew to the point that further history fills books, notably Harry Warner Jr.'s *All Our Yesterdays* (Advent, 1969). In 1934 *Wonder Stories* attempted to boost its circulation by instituting the Science Fiction League, which was to have branch chapters all over the country, promote science fiction, and bring in new readers. It may not have prevented *Wonder's* collapse two years later, but it did spark the formation of many local clubs, a few of which, including PSFS and LASFS, endured well beyond the demise of the League itself. Other magazines tried similar schemes: *Super Science Stories* had the Science Fictioneers and *Weird Tales* had the Weird Tales Club. These had no visible effect on the fortunes of the magazines and at times were no more than name rosters and a few comments printed as departments, but they helped to stimulate the growth of fandom. About this time, in varying degrees of grandiosity, came the first attempts to unite everything into one national club. For one reason or another, these never worked out, and fandom has no central organization to this day.

If you want to start your own science fiction club, how do you go about it? Answer: the same way you would start any other special interest group. You need members and a place to meet, plus a clear idea of what you are trying to do, since organizations which are first founded and *then* attempt to figure out what they are for tend to be short-lived. Organizational talent is required. Somebody has to make sure things happen when they are supposed to. It is best not to be too ambitious on your first try. *Don't* try to sponsor a convention as your opening project! Hold a few meetings, get whatever speakers you can (many professionals, with the exception of the very biggest names who often don't have the time, are often willing to address local clubs free of charge), and see what happens. It is best to have some sort of formal programming when you are starting out, especially if you're starting on a college campus, or other conditions under which you may safely assume that the majority of your prospective members have had no prior contact with this kind of thing. At the same time, don't let your panels or discussions get stuffy and pretentious, or you may drive off as many as you attract. If club meetings aren't enjoyable, nothing can save you. (Thus you want to keep the business part—motions, collecting dues, etc.—*short*.) Encourage your members to correspond with other fans, go to conventions, receive fanzines, and so on. This will keep you from existing in complete isolation from the fannish world. If members lose interest in the programming and the result is a party circuit of



people interested in science fiction, this is not necessarily a bad thing, although the most successful clubs are those which combine and balance both aspects.

To get more ideas, and some direct experience, it would be helpful to attend meetings of established groups in your area. A list of American clubs follows:

## LOCAL ORGANIZATIONS

**Alabama:** Birmingham—*Birmingham SF Club*. Contact is Wade Gilbreath, 4206 Balboa, Pinson AL 35126. Meets on the second Saturday of the month.

**Arkansas:** Little Rock—*SF Group*. Margaret Middleton, Box 9911, Little Rock AR 72219. Meets every other week, usually at St. Michael's Episcopal Church.

**California:** Berkeley—*The Elves', Gnomes', and Little Men's Science Fiction, Chowder, and Marching Society*. Meets on alternate Fridays at an SF bookstore, the Other Change of Hobbit, 2433 Channing Wy., Berkeley CA 94794.

Berkeley—*The Phages*. Meets Tuesday evenings on the University of California Berkeley campus. Office of Student Activities, Sproul Hall, University of California, Berkeley CA 94720.

Berkeley—*The Northern Kingdom*. An association of Northern California fantasy fan groups. Publishes the *Norland Chronicles*, a quarterly. David Bratman, Box 4651, Berkeley CA 94704. Holds regional meetings three times a year.

Cerritos—*Cerritos College SF Organization*. Jay Konigsber % Moffatt, Box 4456, Downey CA 90242. Meets Tuesdays at 11 A.M. in the LH building of the college.

Lancaster—*High Desert Science Fiction Society*. Bill & Lois Thompson, 45440 N. 10th St. West, Lancaster CA 93534. Meets every Wednesday.

Los Angeles—*Los Angeles Science Fantasy Society*. Clubhouse is at 11513 Burbank Blv., North Hollywood CA 91601. Meets Thursdays at 8 P.M.

Los Angeles—*Cartoon Fantasy Organization*. Fred Patten, 11863 West Jefferson Blv., Culver City CA 90230. Meets on the third Saturday of every month for a day-long program of animated films, cartoons, and other fare.

Los Angeles—*Icarus*. UCLA science fiction club. Meets Fridays in Ackerman Union on campus.

Los Angeles—*Astra*. Meets first and third Sundays at 3 P.M. in the Great Western Savings Community Center Room (upstairs), 3660 Wilshire Blv., Los Angeles.

Manhattan Beach—*SF 3*. Meets the second and fourth Thursdays at 7:30 P.M. in Stars'n Stuff Books, 1148 Highland Ave., Manhattan Beach.

**Pomona—Cal. Poly. Science Fiction Club.** Write to the club at 3801 W. Temple Ave., Pomona CA 91768.

**San Jose—San Jose Science Fiction and Fantasy Society.** Meets the first and third Saturday of the month at 7 P.M., at the home of Terry Whittier, 307 Tradewinds Dr. #3, San Jose CA 95123.

**Colorado: Boulder—B.O.S.C.O.** Meets the first Friday of the month in the Majestic Federal Savings Building in Boulder.

**Denver—D.A.S.F.A.** Meets the third Saturday of each month in the S.W. State Bank, 1920 S. Federal, Denver.

**Connecticut: New Haven—Fred (New Haven SF and Fantasy Society).** Muriel Van Sweringen, Box 44, Derby CT 06418 or John Leland, 451 Orange St., New Haven CT 06511. Meets every other week at members' homes.

**District of Columbia: Washington—Washington Science Fiction Association.** Alexis Gilliland, 4030 S. 8th St., Arlington VA 22204. Meets the first and third Fridays of each month in member's homes. Runs the convention, Disclave.

**Georgia: Atlanta—Atlanta Science Fiction Club.** Cliff and Susan Biggers, 1029 Franklin Rd. # 1-C, Marietta GA 30067. Meets monthly in the common room of Kintown Apartments, 1870 Dresden Dr., Atlanta.

**Hawaii: Honolulu—Honolulu Science Fiction Society.** Seth Goldberg, Dept. of Chemistry, University of Hawaii, Honolulu HI 96822. Meets monthly at the University of Hawaii campus center.

**Idaho: Boise—Boise Area SF & F Association.** Write to 518 Eagleson Rd., Boise ID 83704.

**Illinois: Chicago—(an informal group)** Write to George W. Price, 1439 West Northshore Ave., Chicago IL 60626. Meets the third Saturday of each month.

**Massachusetts: Amherst—University of Massachusetts SF Society.** Write the club at RSO 352, Amherst MA 01003. Located in room 434 of the Student Union Building; open daily and most nights during the school year.

**Brookline—The Other Club.** Joe Ross, 30 Winchester St., Brookline MA 02146. Meets every other week in the M.I.T. Science Fiction Society library (see below).

**Cambridge—M.I.T. Science Fiction Society.** Meets weekly in Room W-20-421, 84 Massachusetts Ave., Cambridge MA 02139.

**Cambridge—New England SF Association.** Box G, M.I.T. Branch, Cambridge MA 02139. Business meeting the second Sunday of each month at the Belmont Lion's clubhouse, 1 Common St., Belmont MA. Hosts a convention, Boskone.

**Maryland:** Baltimore—*The Hopkins SF Association*. Dan Lebar, 3706 N. Charles St. # E-3, Baltimore MD 21218. Meets every other week in the Johns Hopkins student union, conference room A.  
Wheaton—*Potomac River SF Society*. Don Miller, 12315 Judson Rd., Wheaton MD 20906. Informal meetings on the second Friday of each month in the meeting room of the Wheaton Regional Library, Georgia and Arcola Aves., Wheaton.

**Michigan:** Ann Arbor—*Stilyagi Air Corps*. Sandi Lopez, 109 Glen, Ann Arbor MI 48104. Meets Wednesdays on the fourth floor of the student union, University of MI, Ann Arbor.

Detroit—*Wayne Third Foundation*. Write to Box 102 SCB, Wayne State University, Detroit MI 48202. Meets every Wednesday when school is in session. Publishes *Seldon's Plan*.

Ypsilanti—Eastern Michigan University SF Club. Write to Steve Simmons, 2362 Jonathan, Ann Arbor MI 48104. Meets Mondays in room 327 Goodison, Eastern Michigan University, Ypsilanti, at 8 P.M.

**Minnesota:** Minneapolis—*Minnesota SF Society*. Write to 343 East 19th St. # 8B, Minneapolis MN 55404. Sponsors a convention, Minicon. Publishes *Rune*.

**Missouri:** St. Louis—*St. Louis Science Fiction Society*. Write to Michael Fix, 8140 Page, # B-3, Vinita Park MO 63130. Meets the third Sunday of the month except in December, July, and August in the Women's Building Lounge of Washington University. Hosts Archon; publishes a newsletter.

**Mississippi:** Jackson—*The Chimneyville F&SF Society*. Write to Faith Vedder at Box 10895, Jackson MS 39209.

**North Carolina:** Raleigh—*The Nameless Order of R'Lyeh*. Write to Scott Whiteside, P.O. Drawer 25830, Raleigh NC 27611.

**New Hampshire:** Laconia—*Lakes Region SF Group*. Write to Ed Meskys, Box 233, Center Harbor NH 03226 or Sherwood Frazier, 106 School St., Laconia NH 03246. Informal group usually meets on the first Sunday of the month.

**New Mexico:** Albuquerque—*Albuquerque Science Fiction Society*. Write to Bob Vardeman, Box 11352, Albuquerque NM 87112. Meets the first Thursday of every month. Sponsors Bubonicon.

**New York:** New York—*New York University Science Fiction Society*. Write to Marc S. Glasser, 41 Eastern Parkway, # 10-B, Brooklyn NY 11238. Meets every Thursday at 5 P.M. in Loeb Student Center, Washington Square South at LaGuardia Place.

**Ohio:** Cincinnati—*Cincinnati Fantasy Group*. Write to Lou Tabakow, 3953 St. Johns Terrace, Cincinnati OH 45236. Meets alternate Saturday nights in members' homes. Hosts two conventions, Midwestcon in June and Octocon in October.

Columbus—*Central Ohio Science Fiction Society*. Write to Larry Smith, 194 East Tulane Rd., Columbus OH 43202. Meets in members' homes the second Friday of the month at 8:30 P.M.

**Pennsylvania:** Philadelphia—*Philadelphia Science Fiction Society*. Write to Randi Millstein, 10104 Clark St., Philadelphia PA 19116. Meets at 8 P.M. on the second Friday of every month at Chestnut Hall, 39th and Chestnut Sts., Philadelphia. Hosts a convention, Philcon.

Pittsburgh—*Western Pennsylvania SF Association*. Write to Barbara Geraud, 1202 Benedum Tree Building, Pittsburgh PA 15222. Meets Sundays at 2 P.M. in Skibo Hall on the Carnegie-Mellon University campus, or at other times in members' homes.

**Rhode Island:** Providence—*Rhode Island SF Association*. Write to Don and Sheila D'Amassa, 19 Angell Dr., East Providence RI 02914. Meets each second and fourth Friday, except in July.

**Tennessee:** Chattanooga—*Chattanooga SF Association*. Write to Dick and Nicki Lynch, 4207 Davis Lane, Chattanooga TN 37416. Meets the third Saturday of each month in the Tennessee (Chattanooga) Student Center when it's open, or in the First National Tennessee Bank when it isn't.

Nashville—*Nashville Science Fiction Club*. Write to Ken Moore, 647 Devon Dr., Nashville TN 37720. Meets the third Monday of the month at 7 P.M. in the Fidelity Federal Bank Building, 3001 Nolensville Rd., Nashville. Runs an annual convention.

**Virginia:** Newport News—*Hampton Roads SF Association*. Write to Mary Tyrrell, 414 Winterhaven, Newport News VA 23606.

**Washington:** Seattle—*Northwest Science Fiction Society*. Write to Greg Bennett, 13001 79th Place NE, Kirkland WA 98022. Meets at members' homes or at local conventions the last Saturday of the month. Publishes *Westwind*. Hosts Norwescon.

Seattle—*The Nameless Ones*. Meets at Horizon Books on Capitol Hill the second Friday of each month about 7 P.M.

**Wisconsin:** Beloit—*SF & F Society of Beloit*. Write to Martin Wooster, Box 1691, Beloit WI 53511. Meets every second Wednesday from 6:30 P.M. to 8 P.M. plus a dinner meeting on the second Sunday.

Madison—*University of Wisconsin Tolkein Society*. Write to Jeffrey Painter, 723 Pitman, Witte Hall, Madison WI 53706.

**Alberta:** Edmonton—*Edmonton SF and Comic Arts Society*. Write to ESFCAS, Box 4071, Edmonton Alberta T6E 4S8 Canada. Weekly meetings on alternate Mondays and alternate Thursdays at the University of Alberta. Runs NonCon.

**British Columbia:** Vancouver—British Columbia SF Association. BCSFA, Box 35577 Station, East Vancouver BC V6M 4G9 Canada. Meets the third Saturday of the month at 8 P.M. in members' homes. Publishes *BCSFAzine*. Hosts V-Con.

## CORRESPONDENCE CLUBS

*Burroughs Bibliophiles*. Vern Coriell, 6657 Locust, Kansas City MO 64131.

*Carolina Fan Federation*. Edwin L. Murray, 2540 Chapel Hill Rd., Durham NC 27707.

*International Wizard of Oz Club*. Fred M. Meyer, 220 North 11th St., Oscanaba MI 49829.

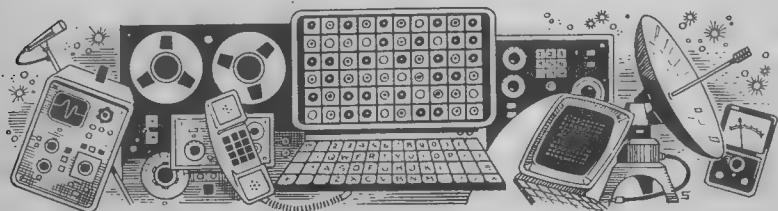
*First Fandom*. Lou Tabakow, 3953 St. Johns Terrace, Cincinnati OH 45236. "A world-wide organization composed of those who showed some activity in the field prior to 1939."

*The Mythopoeic Society*. Box 4641, Whittier CA 90607. Devoted to Fantasy Fiction, especially that of Tolkien, C.S. Lewis, and Charles Williams.

*The National Fantasy Fan Federation*. Mrs. Janie Lamb, Rt. 1, Heiskell TN 37754. A good way to enter fandom. Publishes *Tightbeam*.

*Southern Fandom Confederation*. Meade Frierson III, Box 9092, Birmingham AL 35213.

*Note:* This list is largely taken from one compiled by Mike Glyer and published in his news magazine, *File 770*, which is an excellent source of information on fan activities. It is available from him at 14974 Osceola St., Sylmar CA 91342. Subscriptions are 4 issues for \$2.00.



# THE COW IN THE CELLAR

by Bill Earls

art: Alex Schomburg



*Mr. Earls reports that he's a rapidly aging 36 and possessed of a wife and two kids that are smarter than he is and an Irish setter that runs through other people's tulip beds. He's a columnist for The Daily Journal of Elizabeth, NJ. Other SF stories of his have appeared elsewhere under such pseudonyms as William or William J. Earls.*

The cellar was well lit in the afternoon, and Samuel moved the cow into the light that came through the window. She looked at him; and as he scratched her between the eyes, she rubbed against him. He tied her to one of the columns and scraped the manure off the floor into a bag. At dusk, he would exchange it with some of the neighbors for bags of weeds and grass while his son stood guard with the shotgun.

He looked at the cow's full udder and smiled. He had customers who would pay five dollars a quart for the milk. Even if it had to be delivered at midnight, the money made it worthwhile. More important, though, was that his children drank a quart a day. Children needed milk.

Feeding and caring for the cow was a constant struggle. He had to save the garden weeds, the cornstalks, and the turnip tops. He sneaked out at night to cut the long grass on the highway interchanges, smuggled it back to the house, and piled it in corners of the cellar. He had to make deals with the neighbors—precious manure for weeds and garden scraps—and had to sweep the floor and insulate the cellar against the animal's mournful noises.

But it was worth it. Just the manure alone was worth it. Forked into the soil, it made the plants bear more heavily, grow taller, fight off disease and insects better. He took pleasure in knowing that his street had more trouble with food poachers than almost any other street in town—and it could be attributed to the cow and the fertilizer she dropped every day.

Upstairs, he checked the barbed wire on the front lawn. One strand was cut and he pretended to ignore it. Poachers: the Callahans, whom he barely knew, would use the security of their own yard to steal from him; and the Smiths, on the other side, wouldn't steal because he gave them manure.

Behind the barbed wire, the string beans and the lettuce were doing well, although the lettuce was the spindly, loose-leaf variety, not the big, round heads he remembered. I must be getting old, he thought—I even remember lawns.

But there were no lawns. Up and down the narrow street, there was only the waving of corn and tomato plants, the sprawling of potatoes and squash, and the neat rows of carrots and cabbage. Leaves were saved for compost, weeds were turned into the soil to enrich it—and Samuel's cow was a source of wealth.

It was also illegal. Animals other than chickens, which were raised by the government, were illegal. Dogs and cats were so rare that to see one was enough to stop a conversation. Even rats were

almost extinct. That a man would have a cow was almost unthinkable. But he had one. And she had to be fed.

He had approached the Smiths, cautiously at first, offering manure for greens. Smith nodded and passed weeds, trimmed leaves, and clippings over the fence in exchange for the manure. Samuel spoke with O'Briens next, then with the Bergmans. No one asked where the manure came from, although they must have known. Even though Samuel cleaned the floor daily and had the walls insulated, the cow could be heard and smelled. But the neighbors took their manure, watched their vegetables grow, and were silent.

In the back yard, Samuel knelt in the dirt and pulled the grass and weeds from between the rows of radishes, snapped the suckers from the tomato plants, the dying leaves from the cabbages, and put them into a pile for the cow.

"Thompson," a voice said. Samuel looked up from his weeding and saw Callahan looking over the eight-foot fence between their yards. He's got a ladder, Samuel thought. That's how he gets over to steal my radishes.

"What do you want?" Samuel said. There had been a time when neighbors had been friends. But that was a long time ago. He could have welcomed Callahan to the neighborhood, but he hadn't; and, because he hadn't known him, hadn't offered to give him manure. And now Callahan wanted to talk with him. He could feel his stomach crawl.

"I want to talk."

"Go ahead."

"Privately." Callahan mouthed the words, "Cow, cow, cow." Samuel stood up and crossed the 20 feet between the radishes and the fence, careful not to step on the butternut squash.

"Hold it, Dad." His son's voice from the window. "I got him covered." The boy was in the window, the shotgun aimed at Callahan's head.

"Put it down, son," Samuel said. "What it is you want?" he asked Callahan, trying to make his voice sound friendly.

"Let's be friends," Callahan said.

"Okay."

"You have a cow."

"Says who?"

"I can smell it. I can hear it. I see you save grass and put manure on your garden."

"You want some manure?" Samuel asked.

"I could get a bounty for reporting you," Callahan said.



"What do you want?"

"Milk. My kids need milk, Thompson. Four quarts a day."

"My kids only get two."

"Mine are thirsty." You liar, Samuel thought. You want to sell it. "And the manure," Callahan said. "I want it all."

"Forget it."

"Two years in jail, Thompson. Look, the longer we talk, the higher my price goes. I'd like some of your string beans, too. I don't have any string beans."

"Come tonight at eleven," Samuel said. He turned away, shuddering.

He milked the cow after supper as he always did, watching the thin, white stream tinkle against the side of the pail, slowly filling it. The cow munched contentedly on cornstalks and turnip tops and he leaned against her warm side.

He remembered buying her, knowing that he had to do something to get protein for his children. He had driven 100 miles to the farm and given the farmer \$2,000. Together they had muscled the drugged animal into the station wagon.

"Be good to her," the farmer had said. "They're takin' my farm, you know."

"They're always taking farms," Samuel said.

"She's a good cow." There had been a tear on the sunburnt face.

"I'll take care of her," Samuel had promised. Now he looked at the cow, then to the milk in the bucket. I could kill her, he thought—the meat would bring \$20 a pound. But it wasn't the money he was thinking of.

He walked outside into the dusk with the bags of manure in his hands. His gut felt tight. Smith's door slammed, and then his head showed over the fence. His hands were full of weeds.

"I got 'em from the interchange," he said. "The cops thought I was takin' it for compost."

"Callahan knows about the cow," Samuel said. He handed the manure to Smith.

"Oh." Smith bounced the bag in his hand. "Does he want manure, too? There's hardly enough to go around."

"He wants it all," Samuel said. "All the manure. The milk. He's trying to blackmail me."

"That'll ruin it for everybody."

"That's what'll happen."

"What are you gonna do?"

"I don't know."

"We could all be in trouble."

"Yuh." Samuel could feel his palms sweating.

"I wish I could help," Smith said. He looked at Samuel; they'd been neighbors for a long time. "Now I'm scared, too." Then he was gone and Samuel was alone in his own yard, watching his plants, his hand on the bag of grass for the cow. His cow.

In the cellar, he fed some more of the grass to the cow, then scooped a fresh piece of manure into another bag. He rubbed the cow behind the ear and looked at her sad eyes. He couldn't imagine being without her.

When Callahan came up the front walk at eleven o'clock, Samuel took the shotgun from his son. He waited for Callahan to bend over for the string beans—he had known that Callahan couldn't resist them—and then shot him in the chest from 15 feet away. Then he called Smith.

By the time the police arrived, the body had been pulled into O'Brien's front yard. Bergman had cleaned the blood from Samuel's walk and Smith had gone with Samuel to speak with Callahan's widow. They were very polite.

"He was trying to steal my string beans," O'Brien told the cop. "He's done it before and I warned him."

"Funny what a guy will risk for string beans," the cop said. There were two quarts of fresh milk in the back seat of the squad car.

---

**Important Notice:** Our address for subscription correspondence has changed. The new address is: Isaac Asimov's Science Fiction Magazine, Box 7350, Greenwich, CT 06830. This address is *only* for subscription matters. Our editorial address remains the same: *IA'sfm*, P.O. Box 13116, Philadelphia PA 19101.

---

**Put your money where your Heart is.**



**American  
Heart  
Association**

WE'RE FIGHTING FOR YOUR LIFE

THE COW IN THE CELLAR

SCIENCE FICTION  
**analog**

*half a century of the  
finest science fiction for the  
one person in a thousand  
who is capable of perceiving  
a changing future*



# HEAR THE CRASH, HEAR THE ROAR

by Jack C. Haldeman II

art: Dan L. Adkins



*After a quick trip up north to show his children real snow, Mr. Haldeman and family are safely back amongst the Florida alligators. The Brothers Haldeman have been working recently on the novel Starschool, which has been appearing in sections in Asimov's SF Adventure Magazine.*

Curt was a demolition derby freak, a fan through and through. He made no bones about it, he'd been one all his life. His parents had never understood his burning interest and neither had the few friends who tolerated him. It was a lonely thing to be a fan. The lights and noise of the track were about all he lived for.

Long ago, Curt had come to realize that he could never be a participant in this greatest of all contests. He was too short, too weak. A leg broken in his teens had never healed properly. A childhood disease had left one arm a little shorter than the other. But the weakness of his body had not spread to his spirit. If he could never taste the sand in the middle of the track, he would at least come as close as humanly possible.

He pushed his broom along the concrete, stooped to pick up a discarded paper cup. Soon. It would start soon. Already people were beginning to file into the stadium.

During the week Curt disguised himself as a mild-mannered insurance salesman, but every Friday at 5:15 P.M. that all changed. He traded his three-piece polyester suit for a pair of blue jeans and a t-shirt, then headed for the track. Armed with a broom and dust pan he swept up under the stands before each event. He loved it, got to see all the derbies. He would have done it for free, but they paid him. Anonymously, he donated a rather large portion of his salary to the Widow's and Children's Fund. These brave men were his heroes; they were larger than life.

"Hey, Curt. How's it going?"

He raised his broom, turned around. It was Wino Willy, one of the regulars. He always had a tip or was looking for one. Everybody had an angle.

"Not bad, Wino, not bad." Wino Willy was okay, but a little dumb.

"You rooting for Bruiser again tonight?" asked Wino Willy. Curt gave him a sour look.

"I always root for Bruiser."

"Har, har," laughed Willy, taking a slosh from a paper bag. "Bruiser's in a slump. Hasn't finished in the last five derbies. The smart money's all on Rocko."

"What do they know?" said Curt. "Bruiser's going to pull out of it; he always does. He's got class, *finesse*. Bruiser isn't like a lot of those turkeys out there. He's got real talent."

"He may have talent, but Rocko's got the muscle. On a streak, too. Three in a row."

"This is the big one. Bruiser always comes through for the big ones. I'll stick with him."

"You always do," said Willy. "Same place?"

"Sure," said Curt. A group of the regulars always met in the top row of the north stands. It was a good place to watch.

"See you there," said Willy. He disappeared into a clump of people, paper bag in hand, undoubtedly looking to spread the word about Rocko.

It was getting too crowded for Curt to swing his large broom, so he headed around to the halls back by the dressing room. He always saved those halls for last. Actually, he wasn't required to sweep back there, but he always did. The men deserved more than dingy, dirty halls. Occasionally he brought 100-watt light bulbs from home and switched them with the 40-watters the management always used. No need for gloom outside the dressing room. He polished all the door knobs and kept the walls and windows sparkling. The floor was almost clean enough to eat off of. He was proud of the job he did back there, real proud. Besides, it was a good place to see his heroes as they went back and forth to the track. That was a real thrill. Sometimes they came so close he was tempted to reach out and touch them. They were that close. Once in a great while—very rarely—one of them would actually say something to him.

"How you doing?" they would ask. Or "Hello." Sometimes they nodded at him.

The elation Curt felt at those times would crack the Richter Scale, if they could measure such things. Speechless in front of those giants among men, it was all he could do to smile back, much less say anything in return.

Curt knew the stats on all the players by heart, especially Bruiser: 32 years old, 6'2", 235 pounds of solid muscle. More than muscle, he had brains, class, a technique that gave him the winning edge over those other yokels. Curt lived in dread that Bruiser might be traded some day to another city. It would be hard for Curt to move, change jobs, find another place to live. But he'd do it, no question about it at all. He lived for the sport, and to him Bruiser was king. Good many years left, too. Thirty-two wasn't all that old, no matter what anyone said.

A roar from the crowd brought Curt away from his daydreams. That would be the start of the figure-eight race, opening the evening's program. The management always started things off with a figure-eight race. Most of the crowd loved them, but they bored Curt. There just wasn't any skill involved in going around in a figure eight and trying to avoid the others on the track. A lot of that was just luck, dumb luck, being in the right place at the right

time. The demolition derby wasn't like that at all. All your moves had to be thought out in advance. It took *skill*.

Curt finished sweeping the hall, gave the doorknobs one last swipe for good measure. It looked good, real good. He put his broom and dust pan back in the closet and took out a small cooler he'd stashed there. Taking his time, he walked up the stairs to the north stands. The cheering had died down; the figure-eight race had finished. They were getting ready for the main event.

A cool breeze flowed over the track; the sky was dark and clear. There had been no rain for several days, so the dirt surface of the track should be in excellent condition. Curt saw Wino Willy, Bird Head, and the rest of the regulars in their accustomed places. They waved and he joined them, sitting in his usual seat. The loudspeaker announced the names of the participants. This was the big one; it would decide the championship. Curt cracked a cold imported beer from the cooler. He couldn't stand the flat draft beer they served at the concession stands. One by one the men took their positions around the edge of the track.

Curt wondered what it had been like back in the old days, back when they still used cars.

Only sometimes they called them automobiles, or some such thing. Curt wasn't too sure about that.

Mostly they were just old tales, told to him on his Granddaddy's knee. They didn't make much sense. Why would anyone want to ride anything but the Tube? And what did *cars* have to do with the demolition derby, anyway? He sipped his beer and the derby started.

Bruiser came out toward the center of the track, slowly, carefully, measuring each step. Only the foolish, the inexperienced, rushed into things at a derby. You had to circle, size up the opposition before making a move. To be rash was to go down and to go down was to lose. Bruiser wasn't rash and he wasn't a loser.

The lights glittered on Bruiser's red helmet. His hands were in his pockets, of course. If you took your hands out of your pockets it was automatic disqualification, out of the derby. The white number one showed clearly on his helmet, his chest, and his back. It was a badge of honor, earned by sweat and skill. It meant he had finished at the top of the standings last year. If he didn't win tonight, he'd lose it for sure. He wouldn't like that at all.

Some kid came rushing blindly at Bruiser. It was a really dumb move, an attempt to knock off the king right at the beginning, make a quick name for himself. Bruiser easily sidestepped the clumsy attack, sticking out one foot and tripping the kid. As he fell, Bruiser

twisted around and kicked him in the side of the head. He went out cold. Down for the ten count. The striped-shirted referees dragged the kid off the track.

Curt was ecstatic. "Did you see that?" he shouted. "A perfect *yoko geri*."

"A *what*?" asked Bird Head.

"A *yoko geri*," said Curt. "Don't you know the first thing about karate?"

"Who's he? He out on the track tonight?"

"No, dummy. Karate isn't a person; it's a discipline, a way of life. It's self defense and a very deep philosophy all rolled into one."

"So? I don't see no philosophy out there. Just a lot of bashin' and mashin'." Bird Head grinned. He *liked* bashin' and mashin'.

Curt sighed. "Look at Bruiser, the way he holds his body. Perfect. It's obvious he's dedicated his entire life to the study of karate. He probably works out for hours every day. All the serious students do that. A *yoko geri*, for your information, is a side kick. A very complicated move. To do it right requires perfect balance, especially with your hands in your pockets."

"Have to admit he mashed that sucker good."

"Look at him," said Curt in exasperation. "Watch him move. He moves like a ballet dancer. Karate will give you that kind of grace."

"Ballet!" said Wino Willy. "Bruiser in a tu-tu. Har, har. He heard you say that, he'd tear your arms off. Har, har."

"Cretins," said Curt, taking another pull off his beer. He turned his attention back to the track. What did those clowns know, anyway?

The action was picking up. Sometimes two people would team up together to mash another person, only to turn immediately against each other. Alliances were a transient thing in the demolition derby business. There could only be one winner. It was every man for himself.

Looking out for himself was one of the things Bruiser did best of all. It wasn't that he would run from a fight or anything like that, but he stayed out of trouble as much as possible. Let the eager ones wear themselves out early. He was too smart for that.

Terrible Ted came his way with murder in his eye. Bruiser didn't like it a bit. Terrible Ted was fifth in the standings going into tonight's event. He was a longshot, but getting Bruiser would help him a lot. He faked a dropkick, lowered his head and charged.

At the last moment, Bruiser turned sideways, swung his foot around, and caught Terrible Ted someplace near the armpit. Ter-



rible Ted went down, but he wasn't out. He struggled to get to his feet before the ten count.

"*Fumikomi*," yelled Curt from the stands. "Now, Bruiser! *Fumikomi*."

As if in answer, Bruiser raised his right leg and stomped down on Terrible Ted.

"Atta way, Bruiser. *Fumikomi*!"

Terrible Ted's eyes glazed over and a silly grin spread over his face. With a sigh he went down. For the count. They hauled him away.

"Did you see that?" yelled Curt. "A perfect combination. A *ma-washi geri* followed by an excellent *fumikomi*."

"Looked like he just stomped him to me," said Bird Head.

"Shows how much you know about the finer points of the derby," said Curt. "A circle kick followed by a stamping kick. Classic combination."

"That's what I said. He stomped the beans out of Terrible Ted."

"Har, har," said Wino Willy.

"Harumph," said Curt, cracking open another beer. Typical shallow fans, not like him at all. All they were interested in was seeing some heads get bashed. They'd never appreciate the subtleties of the derby. "Come on, Bruiser," he yelled. "Do it."

Bruiser couldn't hear him, of course. He didn't pay much attention to the spectators, anyway. They bought tickets and the winner's share came out of that money, so he guessed they were important in some way. He really never thought about it much, unless there was a good-looking girl in the front row. Just thinking about the other fellows on the track was enough; too much, sometimes. Bruiser had what you might call a limited attention span.

There were fewer people left on the track now, but the pace was getting frantic. Occasionally a whistle would blow, indicating hands-out-of-pockets. This was usually followed by moans and boos from the crowd as the player would be led protesting from the track. They always protested. It never helped.

Bruiser got tripped up by Macho Mike. It looked like things were doomed. But at the last minute, when Macho Mike was closing in for the kill, Bruiser sprung up and caught him under the chin with his helmet. Knocked him silly. Bruiser would have done the same thing even without the helmet and it would have had the same effect. Heads just didn't come any harder than Bruiser's.

It drove Curt wild. He cracked another beer. He felt so good he even gave one to Bird Head.

"Har, har," said Wino Willy, draining his paper bag.

Bruiser took out three more men, receiving a few lumps in the process. Things were getting tougher. He never saw Rocko coming.

Rocko blindsided him with a helmet to the kidneys. It hurt a lot. It sent Bruiser sprawling. Without his hands to break his fall, he tumbled a long way. He got to his knees on a count of six. Rocko was on him immediately, swinging a kick at his head. Bruiser ducked under the kick and rolled hard at Rocko's other leg. He connected and Rocko went down. Bruiser backed away and got to his feet.

Bruiser tried to shake the fuzzies from his head. Rocko pulled himself up. The crowd went wild. Bruiser looked around and saw that they were the only two remaining people on the track. This was for all the marbles. Number one. They circled each other warily.

Curt was so excited he even gave Wino Willy a beer. Wino Willy wouldn't know imported beer from dishwater. His taste buds had given up the fight a long time ago. He drained it in one long pull.

"Har, har," he said.

Rocko fainted, trying to pull Bruiser off balance. Bruiser fainted, trying to pull Rocko off balance. They were two of the best. They went around for a long time before either of them made a real move.

The first to commit himself was Rocko. He faked wide and came in close. Bruiser took a tremendous kick to his back, staggered, but managed to stay on his feet. Rocko was thrown off guard for a split second, and that was all it took.

Bruiser, taking advantage of being so close, jabbed Rocko in the diaphragm with his elbow. It took Rocko's breath away. He slumped to his knees.

"Way to go," yelled Curt. "*Empi uchi.*"

"He clobbered him in the stomach with his elbow," said Bird Head.

"That's what I said," replied Curt.

A gentle tap knocked Rocko to the ground. He went down for the ten count. Bruiser was number one for another year. The stands went wild.

Curt went crazy. Bird Head asked him for another beer. So did Wino Willy. The cooler was empty.

"Har, har," said Wino Willy, who left to see if he could scratch up another bottle of muscatel.

"See you later," said Bird Head. He left, too.

Carl just sat there as the stands emptied. He was happy as a clam. Bruiser had won. His man was number one without a doubt. Everything was right with the world. He didn't believe he could

possibly be happier.

Curt computed the final standings in his head. He ran a won-lost percentage on the top five finishers. It was hard to believe the season was over. The new one wouldn't start for two whole weeks. He gathered up the empty beer cans and put them back into the cooler. No sense leaving a mess. That was the kind of thing those other people did.

The stands were empty. Where there had been glory only a few short moments ago, there remained only silence and the settling dust over the track. One by one the stadium lights went out. Curt walked down the steps with a smile on his face and a song in his heart. What a beautiful night! He whistled a happy tune to himself. Somebody else cleaned up after the derby. He had nothing to do but go home and savor the win. That was enough, more than enough. He would savor it for a long time. It was almost as if he had been down there on the track himself. He reached the bottom of the stairs and headed down the corridor toward the exit. He was so preoccupied he didn't see the man until he bumped into him.

"Excuse me," he said automatically.

"Was nothin'," said the man.

There was something in the voice that made Curt look up. A strong voice: deep, powerful, vibrant. He looked hard in the dim light. There was something familiar about the man. Could it be? No, it was impossible. Yes! He almost didn't recognize him in street clothes, without the stomping boots, the red helmet, the number one on his chest.

Bruiser!

"Pardon me, Mr. Bruiser . . ." he said timidly.

The huge man turned around. "Huh?" he said.

"I was wondering, I mean . . ." Curt fished quickly through his pockets for a piece of paper, came out with a crumpled program book. "Would you sign this for me?"

"Can't write none," said Bruiser, shaking his head.

Curt was almost embarrassed, but quickly buried the feeling. After all, many of the greatest athletes of the world hadn't been able to write. Some of the greatest thinkers, too. That couldn't matter much. It was what you did with your life that counted.

"You were spectacular tonight," said Curt. "I'm a big fan of yours."

"Had a good night," said Bruiser. "Really mashed 'em up."

"I loved your karate moves," said Curt. "It's rare to see such precision, such perfect execution."

"Who's Karate?" asked Bruiser. "Someone I mashed tonight?"

Bruiser's brow was wrinkled. He was trying to remember someone named Karate. Remembering wasn't one of Bruiser's strong points.

Such modesty. Curt realized that it *was* true that the greatest were often the most humble.

"That *fumikomi* you exhibited on Terrible Ted was fantastic. Poetry in motion."

"That *what?*" asked Bruiser.

"*Fumikomi*. The stamping kick. Beautiful defensive maneuver."

"Yeah. I remember Terrible Ted. I really stomped him good."

Ah, that was Bruiser. What a gift to be able to translate such a complex action as the *fumikomi* into language anyone could understand. He was truly a man of the people, a great man of many talents. Curt was in seventh heaven. He cleared his throat self-consciously.

"I too have studied the art, though only from books, of course. I know the striking points: *empi*, *koshi*, *kakato*, *teisoku*, *sokuto*, *hai-soku*, *hittsui*. I know the places and methods of attack to inflict the most damage. The knee, for instance, is damaged more by a blow at a 45° angle than a straightforward hit."

Bruiser scratched his head, wondering just what the hell this little guy was talking about. "Don't know nothing about angles," he said. "Don't mean to hurt nobody, just stomp 'em a little, bash a few heads."

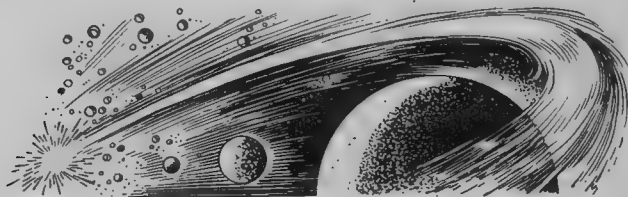
Such compassion. Curt was awestruck at the hidden depths of this man.

"I'm sure you work out on the *makiwara*, the training post."

"Naw," said Bruiser. "I work out at Freddy's Gym, which is where I'm heading now on account of I live behind the kitchen."

"I won't keep you," said Curt, bursting with joy as he reached out to shake the large man's hand. "Thank you for your time and taking the trouble to share your words of wisdom with me."

"Ain't nothing," said Bruiser. And he was right.



# THE WOMAN WHO LOVED THE CENTAUR PHOLUS

by Gene Wolfe

art: Hilary Barta

*The author was born in Brooklyn, NY, in 1931. He graduated from high school in Houston, TX; attended Texas A & M; served in the infantry in Korea in the 1950s; and later got his degree from the University of Houston. He now lives near Chicago, IL, with his wife and four children. Mr. Wolfe has two books forthcoming from Simon & Schuster and Pocket Books: The Shadow of the Torturer, a novel, and the collection, The Island of Dr. Death and Other Stories, and Other Stories (and that title is not a typographical error).*

Anderson's telephone rang, and of course it was Janet. Anderson swung his feet over the side of the bed before he hung up, then looked at his watch. Four twenty A.M. The moonlight on the melting snow outside sent a counterfeit dawn to his windows.

He switched on the reading light and found his slippers, then kicked them off again. There would not be time for slippers. The little water-horse that Dumont—Dumont would surely be there too—had made for him lifted its head and foaming mane above the rim of its aquarium and neighed, a sound so high pitched it might have been the chirping of a bird.

So like they were, no mortal  
Might one from the other know;  
White as snow their armor was,  
Their steeds were white as snow.  
Never on earthly anvil  
Did such rare armor gleam,  
And never did such gallant steeds  
Drink from an earthly stream.



Who had written that? Anderson couldn't remember.

Before he had gone to bed he had filled the stainless-steel thermos with scalding coffee, telling himself he would not need it, that he would drink it with breakfast so as not to waste it. Wool shirt with lumberjack checks, wool hunting pants, thick socks, rubber-bottomed hunting boots, down-filled vest, parka, Navy watch cap. Gloves and compass in the parka's pockets? Yes. His sign was already in the car, and the chains were on. It started without trouble; he roared out of the driveway and down the silent street. Coming, Janet. Coming, Pholus, or whoever you are: Damn.

When winter was beginning, he had gone out in the suit he wore on campus, with the same overcoat and hat. He had learned better, floundering through the snow long before machinegun slugs had ripped the weak and frightened siren, the bird-woman whose scattered feathers he had helped Dumont gather when the soldiers were gone. There was a mail-order company that sold all sorts of cold-weather gear. Their prices were high, but the quality was excellent. Never on earthly anvil . . . How did the rest go? Something, something, something . . .

*O'er the green waves which gently bend and swell,  
Fair Amphitrite steers her silver shell;  
Her playful dolphins stretch the silken rein,  
Hear her sweet voice, and glide along the main.*

No, that wasn't it, that was Darwin, the father (or was it the grandfather?) of Dumont's Darwin, the Darwin of the *Beagle*. Anderson swung onto the Interstate. For mile after mile, the red taillights of the cars in front of him looked like the red eyes of beasts, prowling the snow by night.

At last, just to hear a voice, Anderson said aloud, "They sell everything but Odysseus's wax. But then, I don't need wax." He had been thinking of the man-headed bull, Nin, of Assyria; that too had been killed, and the memory of its wings suggested the siren again. As if the CB had heard him and knew his loneliness, it murmured, "Breaker one one. This is Sombelenë for Peirithous. Come in, Peirithous."

"I'm here, Sombelenë," Anderson answered. He did not know where Janet had discovered that name. It had not been in any of the references he had checked.

"Go past the sign for the Dells, Peirithous. After a quarter mile you'll see an unmarked road on your left. We're about three miles

farther on."

"Ten-four and out," Anderson said. He hated the pseudonyms, and he was certain the Army knew who they were anyway.

As if to confirm it, the threshing sound of a helicopter came from above, louder and louder, then louder still. It passed over the car at treetop level going ninety at least and disappeared beyond the crest of a hill.

"Breaker one one for Sombelenë. Chopper on the way."

"Ten-four, Peirithous."

So Janet knew, and whoever was with her knew. And of course the soldiers knew, in their helicopter.

"All hail, beloved birds," he cried,

"My comrades on the ocean tide."

Anderson passed a billboard showing the little sternwheeler *Apollo* 2 and swerved onto the next unmarked road. There were fresh tire tracks in the snow, and he began automatically to look to left and right, though he knew how unlikely it was that he would see anything from the road. Yet he might. How did it go?

*Will thou yet take all, Galilean? but these thou  
shalt not take,*

*The laurel, the palms and the paeon, the breasts  
of the nymphs in the brake. . . .*

The sun was peeping over the snow-clad hills now, and inexplicably Anderson felt his spirits rise. He was going to a fight, and he would be fighting for the only thing he knew that was really worth fighting for. For once he could not recall a quotation, but he remembered the sense of it, and not just with his mind but in his feet and hands, belly and heart and brain. The second best thing was to fight and win. But the first best thing was to fight the fight worth fighting. Where would he be, if not here?

He topped the hill at better than eighty and saw the cars and signs and milling people. The helicopter had set down in a field just behind a wood of birch, and there were two olive-drab Army trucks. He hit the brakes and went into a long skid, steering into it just the way that racing driver had advised on television, still utterly unafraid but feeling he must somehow be drunk. The car turned ninety degrees and skidded to a stop less than a dozen feet from the nearest truck.



Anderson jumped out and drew his sign from the back seat as some earlier Anderson might have drawn a sword. The sign read: **INTELLIGENT LIFE IS SACRED.** He flourished it overhead, though he knew the cameras had not come yet. A few of the soldiers stared at him. They were young recruits for the most part, boys under twenty.

Janet ran up to him, boots splashing slush, blonde hair vivid as lightning above her red ski suit. "Andy, I'm so glad you've come! They've sent for a wrecker. They're going to pull the cars out of the way."

"Then we'll lock arms in front of the wrecker," he said. "We can't ask these people to lie down in this slop." He was looking at the other demonstrators as he spoke. There were only six, five of them middle-aged women. Good people, but without leadership they wouldn't stand up to much bullying.

*Send me at least into the war,  
And let me lead thy Myrmidons, that thus  
The Greeks may have some gleam of hope.*

Dumont emerged from his van, caught sight of Anderson and waved. His parka was much like Anderson's own, but his face was thinner and he was going bald. "We don't know what it is, yet. Some of our members are interviewing the farmer who saw it. A capripede, possibly."

"Fine," Anderson said. A satyr, by no coincidence at all, looked like the conventional representation of the Devil—not such an easy thing to defend in public as, say, a little winged Eros.

"You need me out there?" Dumont asked.

"Not yet," Janet told him. "Stay with the radio."

An officer had been trudging across the snow-covered field from the helicopter. He was close enough now for Anderson to see the silver eagles on his field jacket. Roman eagles, Anderson thought. Greek aircraft—the spiral-winged. I'll bet he doesn't know it. Or care.

A bearded man Anderson had not seen before left the cluster of demonstrators to ask, "This new creature . . . will we get to see it?"

"*Him*," Anderson said. "Always say *him* or *her*. It's much easier for them to shoot an it. Maybe, but more likely not."

Janet smiled at the bearded man. "You'll get to see—and even talk to—quite a few eventually, if you keep coming. We might even be lucky today."

The bearded man smiled back beneath his beard and seemed to lift himself on his toes. "There's more than one out there, isn't there? I've heard of them. It makes one feel like Adam."

Anderson said, "We're on the edge of one of the largest forested areas in Wisconsin. A lot of people bring them here, and more drift in. A friend of mine who's a statistician tells me there are gradients of diminishing population we're largely oblivious to. They sense those and follow them to places like this. There are quite a few of them in Minnesota too, and upper Michigan."

Janet added, "The Smokey Mountains are supposed to be full of them. Dr. Dumont plans to go there this summer."

"Professor Anderson?" It was the colonel.

Anderson said, "Afraid so."

"The dossier I saw is a little sketchy, but I thought I recognized you from your picture. What do you teach? Biology? Bio-physics?"

"Classical literature."

"Say, that's interesting. I like Sherlock Holmes myself, and Kipling. I suppose this biological engineering stuff is a hobby with you."

Anderson shook his head.

The colonel glanced around as though expecting to see the Minotaur step out of a cowshed. "I can see where it would be a good one in certain respects. Eventually I assume there will be a licensing procedure and some supervision. At present the thing is a mess."

"The question is which side the mess is on."

"I suppose you could say that. Did you hear what they killed yesterday on Market Street in Philadelphia? A cat with the head of a snake. It was as big as a small dog."

"A great many cats are as big as small dogs, and I'd think it would be a good deal less intelligent a hunter than most cats. No doubt it was somebody's first stab at making a chimera."

The colonel seemed not to have heard him. "They do these things, and they can't handle the results. Then instead of destroying them they turn them loose. It's funny, isn't it, how all the stuff that was originally developed by some high-powered scientists eventually turns into something the average Joe can do in his basement. Take TV—you can get a kit and build as good a television as anybody can buy. Or airplanes—a man I went to the Point with is building a plane in his garage."

Anderson said, "If the Wright brothers hadn't been able to build the first one in a bike shop, there wouldn't be any planes."

"Maybe." The colonel looked unconvinced, and Anderson decided he thought the airplane had been invented by Boeing. "Just the

same, my orders are to clean this up. You and your followers are interfering with that."

"They're not my followers. They simply happen to believe as I do—or rather, I happen to believe as they do."

"Your dossier says you're one of the leaders, Professor Anderson. You're a man and most of them are women; you're well educated and you're the tallest. Who would you think the leader was if you were in my shoes?"

Anderson said, "If I were in your shoes I'd probably be wrong about a lot of other things too," but his attention was no longer on the conversation. A truck was coming over the hill, and at first he thought it was the Army tow truck. Then the bearded man and several of the women raised a cheer, and he saw the call-letters on the side.

The colonel said something inaudible to a captain, the captain mumbled to a sergeant, and the sergeant bawled something at the troops, who fell into ranks. Janet and the bearded man hustled their charges into a straggling line, and Dumont emerged from his van to join them. Anderson suddenly understood that this was what everyone had been waiting for: the Army would prove they were acting without brutality, and let an audience of millions feel the thrill of the hunt; the demonstrators would put their case before the same audience and try to stir up sympathy for the hunted.

A man with a microphone climbed out of the truck, followed by a man with a camera. Guided by unerring instinct, both made for Janet. Anderson wanted to point it out to the colonel, but the colonel was busy looking soldierly as he inspected his troops in the background. In an undertone, the man with the microphone identified his channel and announced that any footage used would make the twelve o'clock news, then switched on his mike.

"You have to realize they will be murdering a *person* out there," Janet said without preamble. "Probably someone with the heart and mind of a child."

"Do you do this sort of life-shaping yourself?"

Dumont leaned toward the mike, his eyes on the camera. "I do. You must understand that it is completely legal as well as morally impeccable. It's not like similar research on bacteria—this can breed no plagues. It's just that the products of this work are deprived of even the protection afforded wild animals."

The interviewer asked, "What is your purpose in doing what you do?"

Janet put a hand on Dumont's shoulder, and Anderson, though

he knew she was projecting for the camera, felt a tiny thrill at the beauty of her profile. "We have lost so many of our fellow citizens of this world. All the larger whales, the gorilla, two kinds of cheetah, all within the last ten years. Now humanity can make real what it has always loved. Now we can see the friends our ancestors dreamed of. The world is big enough for all of us, and some of us don't want to have to live here alone."

Patrols were leaving on foot now, apparently in the hope of drawing the television crew away. Anderson sent off two demonstrators with each, telling them to stand between the hunted and the soldiers' M16s if they could. If they dared. Behind him, the bearded man was talking now. "God gave to the first human being the authority to name the creatures, and in the language of the Bible, to name is to create. 'In the beginning was the word . . .'"

Anderson found himself trudging after a patrol too. Despite their weapons and equipment, the young soldiers moved faster than he, and though their footprints were plain enough in the snow, he lost sight of them when they entered the birches. The helicopter was beating overhead again. Anderson used his sign pole for a staff. The wind that stirred the branches smelled of spring and seemed made of something purer than air; and he felt again, as he had in his car, that he was somehow privileged. After a quarter hour or so, he caught sight of the soldiers—or perhaps of other soldiers. They appeared to have halted to examine some track their own feet soon obscured. Almost at once they were gone again. Exulting in the knowledge that he had not yet heard a shot, Anderson hurried after them. . . .

The sun climbed above the trees. Twice the helicopter had whirled overhead and vanished. The pocket compass Anderson had bought only a few months before was lost somewhere in the snow. Perhaps because Dumont moved, it was him Anderson saw first, his parka looking black against the snow. Then Janet in her red ski suit facing him.

*O Father Jove, if ever I have aided thee,  
Grant but this one desire.*

He called and they answered; and something in their weary voices told him they were as lost as he was, and had been debating which way to go.

A little, ice-choked stream undulated through the snow near where

they stood; and there were rocks, half masked with snow. The sun, too high now to give much direction, flashed from the few whirling flakes still in the air. "Well here we are," Janet said, and laughed. "We three ringleaders! Some leaders. I'll bet you don't know the way back either. Do you, Andy?"

Anderson shook his head. "We'll find it."

"I hope Paul did better."

Anderson decided Paul must be the bearded man.

Dumont said, "We really ought to split up," and just at that moment a little figure stepped around some snow-covered bushes and came hesitantly forward. Its ears were pointed and its face was the face of a clever, sickly child; two small horns pushed through a tangle of dark curls. At first Anderson thought it was—insanely—wearing a scarlet sash. Janet moaned and dropped to her knees beside it, and it let the scarlet sash fall straight. There were fingers at the end of it; its blood dripped from them.

"Your arm!" Janet whispered. "Oh my God, your poor arm."

She and Dumont produced aid kits. Never until that moment had it occurred to Anderson that if the Army were to shoot something, it might fall to him to patch that something up. Coming on top of the lost compass it was almost too much. He experienced a self-contempt as great as the euphoria he had felt earlier, yet at the same time he was compelled to look at the faun's mangled arm as though he too had bandages and penicillin.

Janet muttered, "They shot him! Can you imagine; they shot this little body, this poor baby."

Dumont was tightening a tourniquet about the faun's upper arm. "You're coming home with us, young fellow. I have a place where you can stay until that's better."

"Those aren't gunshot wounds," Anderson said.

Janet and Dumont stared at him; the faun averted its wide, melting eyes.

"I was in the Marines; I saw films, and once one of the men in our barracks got hold of live ammunition and shot a lieutenant. I've seen bullet wounds out here too, and so have both of you. Bullets puncture the skin on entry and leave a blue corona. If they have much velocity left when they exit, they blow out a cone of flesh. They shatter bone, if they hit it. These bones aren't broken. There are puncture wounds, but mostly the flesh is torn. Whatever attacked that arm did it with its teeth—my guess would be a dog."

Then slowly, between minutes of sobbing and despite naïve evasions, it all came out: the dead twin; the footprints like, but not quite like, a bear's; the terror in the winter-wrapped woods. The goat-tongue had difficulty in forming words (Anderson recalled a lisping boy who had lived across the street when he was a child), but they soon grew accustomed to its faults, and the protection its distractions had afforded them vanished. After a time they found it hard to meet one another's eyes.

"Somebody's finally done it," Dumont said at last. "Once at least—probably more. It wasn't me."

"We never thought it was," Anderson told him. He wanted to swear.

"Those tracks couldn't be a centaur's. . . ." Dumont hesitated, looking from Anderson to Janet and back. "A centaur could kill with his hooves, I suppose, or his hands. But his teeth would be no more dangerous than yours or mine. Werewolves?"

"Maybe," Anderson said. "There are other possibilities—Anubis and Set, perhaps even Narashimha, the lion-man of the Vedas. Whatever they are, we're going to have to use our connections with the others to lead the soldiers to them before they kill a human being."

Dumont nodded, but Janet's blue eyes were blazing. "You would, wouldn't you! You'd see them shot down—shot down with guns!"

Suddenly she was gone. Anderson sprinted after her, with Dumont close behind him. They had not run twenty yards through the snow when Anderson heard the thunder of hooves.

Only once before had Anderson seen him. Then he had thought him roan, the human torso, arms, and face, Caucasian. Now Pholus looked black, bigger than any horse, immensely bigger than any man, muscled like a giant. Janet, clinging to his back, harnessing those mighty arms with her slender hands, might have been a child, a little girl dreaming.

He could have trampled them, but at the last moment he turned aside, sending up a spume of mud and melting snow, smiting them instead with his wild glance. Anderson caught a flash of red. Perhaps Janet had waved. Perhaps she had not. Panting, he halted.

Dumont ran on, less swiftly even than Anderson had run. Blindly. Stupidly.

Anderson did not care. In the clearing he found the faun and took him by the hand. The road and the cars, all the relics of the dying

twentieth century except himself, would be in the direction opposite the one Pholus had taken. Anderson trudged toward them.

*Midst others of less note came one frail form,  
A phantom among men; companionless  
As the last cloud of an expiring storm,  
Whose thunder is its knell; he, as I guess,  
Had gazed on Nature's naked loveliness,  
Actaeon-like, and now he fled astray  
With feeble steps o'er the world's wilderness;  
And his own thoughts, along that rugged way,  
Pursued like raging hounds their father and their prey.*



## **THIRD SOLUTION TO HOW CROCK AND WATKINS CRACKED A CODE**

**(from page 81)**

The virus was artificial all right, but not from outer space. A team of biologists at the Artificial Intelligence Laboratory of nearby M.I.T. were engaged in a secret military project to determine if it was possible to transmit cryptographic information by artificial viruses. The project was headed by Isaac Asimov III, a descendent of the celebrated SF and S writer. He had used his own initials in the DNA sequence, aware that they could be reversed to stand for Artificial Intelligence. An assistant had dropped a crock containing the virus. The crock cracked, specimens of the virus escaped the laboratory, and were airborne to the Harvard Yard.

# THROUGH TIME AND SPACE WITH FERDINAND FEGHOOT V!

by Grendel Briarton

art: Tim Kirk



Ferdinand Feghoot and Augustus the Strong, King of Poland, were boon companions for a number of years, indulging in many a high revel together. (Indeed, Feghoot was godfather to more than a score of the King's three hundred and fifty-two acknowledged illegitimate children.)

Only once was their friendship endangered. Augustus, who always consulted Feghoot on serious military matters, had reorganized his personal bodyguard, arming them with the finest halberds obtainable. The huge blades, twice as broad as a headsman's axe, had been forged in Toledo; their immensely long staffs had been cleverly fashioned from black oak by the craftsmen of Nuremberg. Because he had not bothered to tell Feghoot about this, envious courtiers saw their opportunity and started a whispering campaign, telling the King that his friend was ridiculing the halberds and making all sorts of coarse jests about them.

"Ferdinand," growled Augustus, obviously hurt and offended, "those beautiful weapons are my pride and joy—how could you make fun of them?"

"Your Majesty!" cried Ferdinand Feghoot in outrage. "Surely you cannot believe such a lie! Do you think that I, of all people, would tell poleaxe jokes at *your* court?"





# LIKE UNTO THE LOCUST

by Frederik Pohl

art: Jack Gaughan

Part I



*This story is a sequel to "Mars Masked" and "The Cool War," which appeared in earlier issues of this magazine. Because of its unusual length, it is being presented to you as a 2-part serial—the first in the history of this magazine. It is being offered to you in this fashion as a change of pace, rather than a change of policy.*

## I.

Horny Hake parked his new three-wheel Tata in the lot, put the keys in his pocket, and nodded to his parishioners. They nodded back with varying degrees of surprise and puzzlement. Hake understood that. It must have been quite difficult for them to know how to take their minister these days. It was very much a mixed bag.

The First Unitarian Church of Long Branch now had a new green and gold carpet down the main hall, a nubbly pattern that drank up spilled wine and hid cigarette burns; and its roof no longer leaked. In the rectory, Hake had a new computer terminal of his very own; and the road outside his porch ran untroubled from can't see to can't see along the beach. Working as a spy had its payoffs. But it also had its drawbacks; and some of them, Hake knew, were written on his face.

The part that didn't show was even worse, but the bruises that did caused whispers. Hake's favorite magician, The Incredible Art, stopped juggling coffee cups at the entrance to frown at his minister. Haversford, the man from International Pets and Flowers, broke off a polite chat with Elinor Fratkin, the church pianist, to come over toward him. "I had an accident," Hake said at once.

Haversford said cheerfully: "Of course you did, Reverend Hake. My. It must have been a nasty one. But that's not what I wanted to talk to you about. I'm afraid I won't be able to stay for the service, but I wanted to tell you that IPF will be glad to supply you with an attorney."

"What do I need an attorney for?"

Haversford's expression flickered. "Oh—one never knows. If I'm premature, excuse me. But when, uh, if you ever need one, just call my secretary and she'll set up the appointment." He glanced at his watch. "Lovely day," he observed, nodded, and signaled to his chauffeur.

Hake turned away and found himself face to face with The Incredible Art, eyeing him attentively. "I had an accident," Hake said.

"Maybe I should print up cards and hand them out."

Art said, "Horny, don't you think you're a little old to turn into a brawler? What was it, somebody mugged you?"

"Something like that. Listen," Hake said, "let's get together. I need somebody to show me how to work my computer."

"Any time. I'll give you a call." Hake nodded and hurried into the church. He stopped in his private toilet to comb his hair, and did not like what he saw. Not just the black eye and the greenish bruises, still apparent in spite of his secretary's help with makeup and tinted glasses. Worse than that. It was the face of a manipulating and corrupt human being. What he was being paid for was spreading sickness and misery. It did not make it better that he was doing this in the service of his country. It made it worse. His country was a part of himself; and so when he reached the pulpit Hake threw away his prepared sermon and preached from the heart. To his puzzled congregation he said:

"If you pen two wolves in a single small cage, they fight ferociously for dominance. The low, lethal growls. The stiff-legged stalk. The whirl of snarls and snapping jaws; and in a moment one is on the ground, head back, throat and jugular vein exposed for the kill. But there isn't any kill. The weaker one has surrendered. The stronger one has won. The fight is over."

He had their attention, but there seemed to be an undercurrent of hostility. Back in the smoking corner of the church Ted Brant and the Sturgises were passing a joint back and forth. It had not made them mellow. Their expressions were distant and resentful, and Alys did not seem to be with them. "If, on the other hand," he went on, "you cage two harmless, peaceable creatures together—a couple of rabbits, or of gentle doves—there is also a fight. It isn't just for dominance. It goes on to the death. They do not have the specialized predatory armaments to fight with, but only the ineffectual kicks, pecks, and scratches of prey. It takes a long time for one of them to die. The other often dies too. And there isn't any surrendering. They don't know how."

He spotted Alys Brant then, queerly sitting by herself in another part of the room. At least her face showed respect. Maybe even interest. But he did not think it was his words that moved her, as much as the souvenirs from his beating in Italy: the still visible bruises on his jaw, the faint green discoloration that lingered around his eyes.

"We are peaceable people," he said. "Doves. Gentle creatures. But when we look at the world we live in, what do we see? We don't see

war. I rejoice in that. We all take pleasure in the knowledge that no nation is sending its troops or bombers or nuclear missiles against another. But can we call what we see 'peace'? If we do, what do we mean by that word? The headlines don't speak in the vocabulary of peace. The dollar takes a pounding from the yen. U.S. trade embargo rips Brazilian economy. If a pestilence strikes western Europe, we regard it as some sort of a victory."

Jessie Tunman was sitting right below him, her own eyes looking skeptical and angry. Hake hesitated. He was getting into areas he was not yet quite willing to talk about. "I hate war," he finished. "As a small child I lived through one, and it was both terrifying and bestial. But there is one thing that is good about a war. Sooner or later there is an end to it. In this non-war there seems to be no end. We simply go on pecking and scratching and kicking each other forever."

He nodded to the pianist, stepped down from the pulpit, and—on impulse—kept on going right out into the warm autumn day. His first intention was to get a breath of fresh air, but his feet carried him to his Tata. He lifted the transparent dome, climbed in, pulled it down, and drove out of the parking lot. He did not want to talk to his congregation at the coffee hour.

There would be complaints about that. Worse, there would be people who would not complain out loud but would add it to the long list of ways in which their minister was not satisfactory to them. Hell with them, thought Hake. He needed to be by himself.

It was nice to have a car of his own, though. Even a little three-wheeled hydrogen-powered Tata with a bubble roof.

But it wasn't nice to ache all over from the pounding he had taken in Naples, when he was being a spy. Or saboteur. Or whatever he was, maybe general villain.

He was out in the country now, heading toward Freehold. He had no particular reason to want to go to Freehold, so he turned around. The warm day was clouding up, and he would be lucky to get home before it rained. But even so. It was better than listening to Mary Vass bitch about the drapes again. Or to Elinor Fratkin, once more furious because he hadn't introduced the musical interlude properly. Or to any of his flock. About anything. It was his job to minister to their troubled souls, but he had no one to minister to his. About anything.

And if he had had anyone to listen, how could he trust that person? Drafted as a spy, he was part of a cloak-and-dagger conspiracy he had never wanted and saw no good way out of. He knew how to bug

a telephone, break into a room, poison a river, and crush a spine. But he didn't know where to turn for help.

The only person who had ever made sense to him was the girl, Leota, and where was she? Off in some oil sheik's harem!—and she was his only contact with the only group in the world that seemed to be on his side. Whatever his side was. At least of Leota he was sure; she was on his side, and the reason he was certain of that was that every time he thought of her enslaved to the sheik—whatever his name was, Hassabou?, something—every time, there was an unpleasant physical crawling in his groin.

He looked out and discovered he was passing Monmouth Medical Center, which reminded him that there was a coffee shop inside, which reminded him that he was hungry.

It also reminded him that two of his parishioners were patients, one in geriatrics and one in maternity, and if he were half a minister he would stop off and see them.

Well, he thought, he was half a minister—just about half. He postponed lunch and took the elevator up to the maternity ward. Rachel Neidlinger was getting ready to nurse newborn Rocco and needed no comforting, but two floors higher old Gertrude Mengel was delighted to have company. Hake gave her the appropriate twenty minutes to discuss her symptoms and her hopes, few of them realistic, and as he rose to go she said, "Reverend? I've had a postcard from Sylvia."

"That's marvelous, Gertrude. How is she?"

The scant old eyelashes fluttered to announce tears nearby. "I think she's with those bums again."

Internally, Hake groaned. Seventy-year-old Gertrude had been trying to mother her fifty-five-year-old sister ever since their parents died; it was like trying to mother a china egg in the nest, and Sylvia would not even stay in the nest. "I'm sure she'll be all right. She's not, ah, using anything again, is she?"

"Who can tell?" Gertrude said bitterly. "Look where she is! What kind of place is Al Halwani?"

Hake studied the card, a gold-domed mosque overshadowed by a hundred-meter television tower, with blue water behind them. Sylvia had done her own Hegira or Stations of the Cross all her life, tracing the passion of the counter-culture through the East Village and Amsterdam, through Corfu and Nepal. She had begun late and never caught up. And never would. "It's not a bad place, Gertrude," Hake was able to reassure her.

"An Arab country? For a Jewish girl?"

"She's not a girl any more, Gertrude. Anyway, there's a lot of people there who aren't Arabs. It was almost a ghost town for years, after the oil was gone, and then all sorts of people moved in."

Gertrude nodded positively. "I know what sorts of people, bums," she said.

It was no use arguing, although all the way through his bacon, lettuce, and tomato sandwich in the coffee shop downstairs Hake was thinking of reassuring things that he could have said. But hadn't, because there was no point in it; she didn't want to hear. The final pay-out for being a caring minister, and giving your flock the benefit of your insights, was that more than fifty per cent of the time they didn't want to receive them.

Nevertheless he had made the effort, and with that half of his conscience appeased his attention turned to the other half. The half that concerned Leota; the sheik; the Agency. Now that he had a machine that was in the business of answering questions, why shouldn't he start asking them?

But he needed help. He found a phone in the hospital lobby and dialed Alys Brant's number. One of her husbands answered on the first ring. "Hello, Ted? This is Horny Hake. I wonder if Alys could help me out on my new computer this after— Hello?"

Ted had hung up on him.

Hake swore to himself, surprised and angered. Well, the hell with him. He called The Incredible Art, got his answering machine, invited the magician to drop in on him that afternoon to play with the machine, and headed out to the parking lot. There stood his Tata, crystal bubble and bright-yellow paint, sunny on a cloudy day . . . . Oh, there were compensations!

But as he slid under the bubble he saw a note pinned to the steering wheel:

**Our bargain still holds. Get out of this car at once.**

It wasn't signed, but it didn't have to be; it was one of the Reddi brothers, the Indian terrorists whose bruises he still wore. He sat paralyzed for a moment, and then it penetrated that "at once" might very well mean "at *once*." He slid out from under the bubble and stepped back, looking around for someone to talk to about this unexpected problem.

There was a faint hissing sound from the car, a little like the buzz of a young rattlesnake.

Hake had learned something Under the Wire. He dropped flat on





the damp asphalt. There was a blast of white fire and a crack like a giant whip. The shattered crystal bubble flew into the air; the yellow chassis of the Tata peeled outward, and it began to burn.

It was not a very big explosion. The hydrogen fuel was mostly in solid suspension in metal, and it burned rather than blowing up. But it was enough to destroy the car, and it surely would have been enough to destroy Hake, too, if he had been inside it.

When he was through with the police, and the firemen, and when the wrecker had come to tow what was left of his three-wheeler away, one of the policemen gave him a lift home. He didn't need it; he wasn't hurt. But he was glad enough for it, except for the cop's conversation, which was mostly about how unsafe your hydrogen cars were compared to your good old gas-burners—

"Have there been a lot of, uh, accidents like this?"

"No. But it stands to reason."

At his door, Hake thanked the policeman and headed for his bedroom. To his surprise, Jessie Tunman was there before him. She was in his little private sitting room, not the one he used for counseling, hunched over the computer terminal and scowling at the CRT. "Be careful with that!" he snapped.

She blinked up at him, startled but self-possessed. "What in the world happened to you?"

He said, "My car blew up. Total loss."

"Well, I sent off your check for the insurance, so I guess you're covered. Those things aren't safe, you know."

He said, "Thank you but, Jessie, I'd prefer you didn't touch my computer."

She flicked off the switch. "Sure have been a lot of changes around here, Horny. Car blowing up, You getting yourself all beat up. All this new stuff—"

"And here's another change. Please don't come into my part of the house when I'm not here."

She stood up, skinny legs unwinding. She was taller than he was, but she seemed to be looking up at him. "As a matter of fact," she said, "that's one of the changes. You wouldn't have spoken to me that way six months ago."

She started out, then paused in the doorway. "Somebody was looking for you," she reported. "Young fellow, wouldn't say what he wanted. He'll come back later."

"Did you know who he was?"

"If I'd known who he was," she said, "I would have told you who

he was, wouldn't I?"

Hake declined the gambit, saying only, "Close the door, will you?" He didn't want to play Jessie's games just then. He wanted to play with his computer.

He took off his coat and sat before it, trying to make sense of the instructions. Under the Wire he had spent time before the computer terminals; but that was a different kind of terminal and most of his instruction was on how to jam one up, not extract information from it. He didn't know where to begin. And he was itchy. The unwelcome reminder of the "bargain" with the Reddis, the blowing up of his car—and Leota. She was the one he needed to talk to, but beyond that she was someone he *wanted* to talk to. And more than talk.

Hake abandoned the computer, stripped down to underwear, put on his sweat suit, and went for a run along the beach. As a relatively new jock, he liked using his muscles; and by the time he came back he was more peaceful.

Jessie Tunman was gone, but The Incredible Art was waiting in his office. He shook his head at Hake. "What the hell are you into, Horny? Not only did you get beat up, but I hear you blew up your car."

"Come on in, Art. How did you hear that?"

"Talked to my friend at the radio station. You're in the news, Horny. What happened?"

Hake shrugged. "I guess those things aren't safe."

"Hell they aren't. There's less free hydrogen in the tank than there is in vapor in a gas tank. You must've done something wrong."

"I must have," said Hake. "Come look at my computer." He expected that that would stop the questions, and he was right. The magician's eyes gleamed when he saw the layout.

"Ah," he said, "this is something like. Do you know how to use it?"

"Not very well." Art nodded and sat down before the console. He looked it over, then picked up the new phone next to it, dialed the number printed on its base, placed it in its MODEM and turned the main power switch on. Nothing happened.

He started up in surprise at Hake. "What's the matter with it?"

"It's keyed to me, I think," Hake said. "Wait a minute." He pressed his thumb on the unlock key, as he had been taught Under the Wire, and the cathode tube instantly spelled out: **Identity confirmed. Ready to run.**

Art looked at him with some respect. "That's some hot-shot machine, Horny."

"Would be if I knew how to use it. How would I, for instance, try to get information on somebody?"

"What kind of somebody?"

"A girl. Her name's Leota Pauket. Or Backshir. Last I saw of her she was being sold on a slave market in Rome."

"You *are* leading an interesting kind of life," said Art.

"Yeah, but how do I found out where she is now? Or anything else. She's not anybody famous, just a girl who used to go to school at the University of Minnesota."

"Well, we can run a search. If we can get her school record, we can get her Social Security number. If we can get that, we can get all kinds of stuff—maybe credit cards, stuff like that. Want me to try?"

"Yes, please." Art nodded and punched out instructions for a search of the university's student register. In a moment he looked up, grinning.

"Got her. Want to know her grades? Good in psychology and English, not so hot in social studies."

"I want to know where she is."

Art labored for a while, then sat back, frowning. "Not much," he said. "I've got her social security number all right. But there's no credit information. Of course, if I could break their code—"

Hake shook his head. Under the Wire he had learned how to do things like that, but he wasn't sure he wanted Art to know about that side of his life. "Then we're stuck?"

"Well, there's a little, from public records. She was married at nineteen. Divorced at twenty-one. Her permanent home address is I guess her parents' place, in Duluth. But there's a notation that mail sent there was returned."

"Try something else," Hake said. "There's a sheik who bought her in Rome. He ought to be kind of famous, and his name is Hassabou, something like that."

Art looked intrigued but said nothing as he went back to the machine. Hake went into the bathroom to change out of his sweat suit and glowered at the toilet. *There* was the information he needed, but he didn't want to ask for it: the toilet that was his connection with the Agency, by means of a concealed microphone. *They* would certainly know where Leota was.

But they were the people he could not ask, and he was getting discouraged. How could you find a person like Leota? What name, for instance, would she be using? One of the things that made her great as a secret operative was that she was a different woman every

time he saw her. She must, he thought, wake up each morning and decide who she wanted to be: Mata Hari or Doris Day, Helen of Troy or Camille. Her undercover training was almost a waste. She had clearly been born with the skills she needed.

"Horny! How much of this stuff do you want?"

Hake pulled on his pants and hurried back into his sitting room. Art was looking triumphant, as the machine raced through line after line of print-out on the CRT. Hake sat down next to him and tried to keep up, but it was impossible. "Can't you slow it down?"

"Sure thing. Here, let me backtrack." He punched commands into the machine and it blanked, then began again. "Use this key here. It'll freeze till you hit the key, hold it down as long as you want it to roll. Got it?"

"Got it." Hake sat hunched over the machine, trying to take it all in. There was far more information that he could actually use. The sheik's name was Sheik Badawey Al-Nadim Abd Hassabou, and every directory of the rich and the famous had something about him. The sheik's wealth was estimated at more than three hundred million dollars, exclusive of family holdings. The sheik's home was in Rome, Wad Madani, Beverly Hills, Edinburgh, a place called Abu Magnah, or his yacht—depending on the season, and on the sheik's mood. The sheik's interests seemed to be the three S's: sex, surfing, and sports cars. The sheik's family, like the families of most of the oil Arabs, had long since left the Persian Gulf, no longer held the worthless oil leases, had their money in Argentine cattle ranches and Chicago real estate, but saw no reason to spend much time in those places when the fleshpots of Europe and California were so much more fun. The sheik was fifty-one years old, but in astonishingly good health. Hake gloomily accepted the truth of that part of it. The man in the auction room had obviously kept fit.

The information came from gossip columns, financial reports and various who's-who directories. None of it mentioned an acquisition of the sheik's named Leota Pauket, of course. Hake had not expected it would.

He sat back. "Enough," he said. "Does it mention where he is? Still in Rome, I expect."

Art said promptly, "Let's see, that would be celebrity service. Hold on." He punched out orders, and the machine typed out: **Presently in Abu Magnah.**

"Abu Magnah?" Hake tried to place the town and couldn't. He got down the old red atlas and looked for Abu Magnah. It was not on the map. It took Art inquiries to three Arab consulates, the National

Geographic Society, and the cartographical division of the public library before he was able to locate it. Armed with latitude and longitude Hake carefully marked a cross on the map and sat back to regard it. Squarely in the Empty Quarter. Hundreds of miles from anything more metropolitan than a flock of sheep. Hassabou liked his privacy.

Hake stood up thoughtfully. "You want a cup of tea, Art?"

The magician looked at his watch. "Got to leave in a minute, but sure." He hesitated. "Horny? You wouldn't want to tell me what this is all about?"

"Well—she's a girl I know, Art. I'm a little worried about her."

"I can see that you might be."

"You mean because she's in this guy's harem? Well, sure." He grinned suddenly. "Sometimes I think I should've married somebody like Jessie—younger, of course—when I was still in the wheelchair. Then I might not have these problems. Tell me about you, Art, what have you been up to?"

The magician followed him into the kitchen and accepted a teacup. "Well, I'm going to do three TV shows next week, one on the balance of payments."

"Balance of payments?"

"Haven't you been following the news? Everybody with fuel's been jumping the price. The President says we're facing ration cuts before Christmas."

"No, I haven't," Hake admitted, "but what I meant was that seemed a little out of your regular line."

"My regular line," the magician said, "is the totality of human affairs. Including yours." He sipped his tea. "Did you look at the stuff I gave you?"

"What stuff? Oh," said Hake, remembering the tape cassettes that had been rattling around in his bags for weeks, "you mean on hypnosis. No, Art. I'm sorry. I just haven't had a chance. Do you need them back?"

"No, they're copies." The magician finished his tea. "You can worry about your girl friend, Horny. I'm kind of worried about *you*."

After Hake had let him out, he went back into his sitting room and stared gloomily at the computer terminal. It was getting late. Jessie Tunman would be arriving shortly to take notes at the social action committee meeting, and he hadn't had dinner.

That wasn't important. He wasn't hungry. But he was at a dead end. He didn't know what to do next. The Indian twins, Subirama and Rama Reddi, would not stop with blowing up his car, they would

want something from him. He didn't know what, and he didn't know how he would be able to avoid giving it to them, since they clearly had efficient, if destructive, ways of enforcing their desires. And Leota was as far away as ever. If the sheik had left Italy, then presumably he had left her behind, according to the purchase contract. But where was she? Maybe if he let the Reddis get in touch with him they would be able to tell him something—

There was a knock on the door. "Come on in, Jessie," he called. Then, when the door did not open, he answered it himself.

It wasn't Jessie Tunman. It was a shaved-headed, bearded young man with a gay earbob on his femme side who looked at him politely. "Are you the Reverend H. Hornswell Hake? I have something for you."

Hake took it instinctively. It was a summons.

The young man nodded and headed for the street door, calling over his shoulder, "Thank you."

"You're welcome," Hake said to the closing door. A summons! And what had Haversford said, that IPF would give him a lawyer when he needed one? But what was it all about?

There was an easy way to tell. Hake looked at the blue-covered, folded paper and read what it said:

**In the matter of:**

**Sturgis, Sturgis and Brant**

**Vs.**

**H. Hornswell Hake, Esq.**

**Action for damages arising from alienation of affections and loss of consort of Alys Sturgis-Brant.**

Alys's co-wife and husbands were suing him in domestic relations court.

What Art had said was true enough, Hake thought, he really was leading an interesting kind of life.

At nine o'clock the next morning Hake made an urgent call to International Pets and Flowers, and by a quarter after ten he was in their executive offices in Eatontown. The secretary had expected his call.

That didn't guarantee anybody would be waiting to see him. He sat fidgeting over two-year-old *American Riflemen*s and three-year-old *New Jersey Illustrateds*. He had been too upset to run his morning mile along the beach and unspent adrenalin made him edgy. After twenty minutes the receptionist spoke softly into a telephone, looking at him, and after five minutes more she rose and conducted

him to the door. "If you'll go to Building Nine over there," she said.

"The hothouse? Why would a lawyer want to meet me in a hothouse?"

"I couldn't say, sir," she smiled forgivingly, and closed the door behind him. Well, it wasn't the lawyer. It was a dark woman with wrestlers' biceps showing beyond the short sleeves of her T-shirt, and Hake had seen her before. At the trustee's meeting for IPF?

"Hello, Mr. Hake. I'm Nina de lo Padua," she confirmed. "It will be a few minutes yet. Would you like to look around?"

"Actually I'm looking for my lawyer."

"You'll be met shortly," she said.

He objected, "I'm in kind of a hurry—"

"Just make yourself at home. International Pets and Flowers values its trustees, Mr. Hake, and we're really delighted when you can take the time to look us over." She led him down a steamy aisle between growing plants, talking all the while.

She wasn't saying anything he didn't already know. IPF was a cover; its business was bio-weapons. None of them were lethal. Or weren't supposed to be. All were annoying and inconveniencing: Strains of mosquitoes and lice resistant to insecticides. Dutch disease to attack Spanish and Italian olive trees. Hardy-perennial water lilies to choke up canals and rivers—no, Hake corrected himself, that was the Other Side; you could see them in every American waterway. Giant cockroaches, night-flying gnats, you name it.

De lo Padua was telling him how thermal waste from the nearby Jersey Central powerplant was speeding up the growth of their *tilapia* when he reached out to examine a curious stand of dry stalks, covered with stiff, tiny hairs. "Hey, don't touch that!" she cried.

"What is it?"

She looked pleased. "Itchgrass. You touch it, it's like fiberglass. You'll never get it out of your clothes, and the only way it comes out of your skin is it grows out. How'd you like to find that in your back yard?"

I wouldn't."

"And the beauty part," she went on, "is it's a cousin of plain old corn. Know what that means? Once you get that in a cornfield, you can't kill it with herbicides unless you want to kill the corn, too. It metabolizes the same way corn does."

Hake looked at her curiously. "Are you supposed to be telling me this kind of stuff?"

She said virtuously, "Why, I don't know what you mean. I mean, the reason we have it is we're trying to find measures effective

against it."

But he had annoyed her. "Your appointment should be arriving now, Mr. Hake," she said. "Just have a seat. I'll bring him in."

He approached the bench, next to a galvanized tank where some kind of algae was competing with some kind of pondweed. It wasn't pretty, but the sound of trickling water was pleasant enough; still he didn't want to sit. He had rehearsed what he wanted to say to the lawyer fifty times, but he rehearsed it some more, strolling around the hothouse. Loss of consort! Alienation of affections! And he the most innocent of bystanders—Well, not in his heart, he admitted. Not always. But they couldn't sue you for what you might have done. Could they? He found himself standing over a tray of sickly-looking white flowers, bellshaped and all pointing toward the lights overhead—all that survived anyway; most of them were wilted and brown. He picked one of the freshest looking for his buttonhole and glanced at his watch. Eleven-thirty. They had kept him stalling around inexcusably—

"Hello, stud, you just can't quit tom-cattin' around, can you?"

He recognized the voice before he turned around, but it was not one he expected to hear. "Yosper! What the hell are you doing in New Jersey?"

"Why, getting you out of trouble, young Horny," said the spy. "I swear. The more I see of you, the more I don't think I know you. Who's the new broad?"

"Listen, Yosper—"

The little man held up his hands. "Just kidding, Horny. What you do on your own time's your own business—'cept you can always count on the Agency to help out, you know. We got you a good lawyer. You'll see him in a minute, but I was passing through and wanted to say hello." He looked Hake over critically. "Healing up pretty good, aren't you? Well, I guess you can't wait to get on an op again, can you? And there's a real good one coming up. The one we been saving you for, boy."

What Hake thought was that he really could wait, quite a long time. But what he said was, "Is it something big?"

"I'm going on it myself," Yosper said simply.

"Well?" Hake waited, but the little man shook his head.

"Can't say much more, but"—he winked—"you'll like where you're going. Might even see some old friends again."

Leota? He started to ask, but Yosper was ahead of him. "Not that broad," he said quickly. "Forget her, Hake. She's private property now, and we don't want to mess with the party that owns her. Thou



shalt not covet thy neighbor's maid servant, old buddy, that's a rule."

"He's no neighbor of mine."

"Pay attention, Hake! He's an important man. How do you think we got him to drop the charges against you, anyway? You got troubles of your own here, I see. Better get you out of the picture for a while."

"That suit is just crazy!"

"Oh, I wasn't talking about our friend Alys, boy. I meant those bastard Indian twins blowin' up your car."

Jesus, thought Hake, was there nothing these people didn't know? Yosper went on. "They're bad medicine. Far's your car goes, of course, you just go out and buy another. You got the best insurance money can buy. Only don't get hydrogen."

"Why not?" Hake asked, startled.

"Balance of payments."

"But—but I just heard—I mean, oil comes from Mexico and so on, and they're raising their prices—"

"Mexico we can handle," said Yosper. "Just pay attention, will you, boy? Now I got to get my sweet self to Washington for—well, you'll find out what for. Don't keep your lawyer waiting."

"Waiting? My God, Yosper! I've been killing time for the past hour waiting for him!"

"Well, he'll see you now in the board room. Name of Stanford. Nice fellow. Not, you know, one of us, so watch what you say."

The lawyer was young and black, and he wore the double thumb-rings of a group marriage. Bloody marvelous, Hake thought. He deserved an attorney who would be on his side.

"I'm Sid Stanford," the man said. "I get the word that this is a, uh, domestic relations matter, so my first question is what am I doing in it?"

Even more marvelous! Hake snarled, "You're in it because you're paid to be. I assume you like being on retainer for IPF."

Stanford looked at him with a little more respect. "No offense, Hake. All the same, why don't you tell me what it's all about."

"This is what it's all about." Hake took the blue subpoena out of his pocket and slid it over the oak table to the lawyer, who read through it, frowned, turned back a page and read part of it again and then folded it neatly before handing it back.

"Been fooling around with your parishioners, Hake?"

"No. Tell me, did I make a mistake coming to you?"

"As to that," Stanford said wryly, "you're going to have to form your own opinion. My specialty is labor law, not domestic relations. Let's start over again. What has happened between you and this Alys Brant?"

"Nothing, dammit! They're all members of my congregation, and they were having marital difficulties. Alys wanted out of the marriage. I counseled them."

"According to this, you counseled her in, let me see, in Paris, Copenhagen, Frankfurt, Milan, Munich and two or three other places."

"We were both chaperones on a trip to Europe for a bunch of kids. I don't doubt that she had some interest in me, Stanford. Every church has women like Alys Brant in it. When their own lives aren't satisfactory to them they look to the minister. He's a father figure. But I absolutely guarantee that Alys and I did not then, or ever, have sexual relations."

"You're not charged with balling her, Hake. You're charged with alienation and loss of consort—that means, because of you she isn't putting out for Ted and Walter any more. Is that true?"

Hake hesitated. "It—it might be," he confessed.

"You say that in court," the lawyer observed, "and we can settle this thing in five minutes. You'll lose."

"What do you want me to say?"

"Oh, the truth, Hake. But if you're guilty, and that's the best you can do, I don't have a hell of a lot to work with."

"You don't understand, Stanford. Women fixate on their ministers. Alys is a good-looking, sexy young woman, with a lot of romantic ideas."

"Does she work?"

"Sometimes. She's got a degree in library science, and a minor in psychology. But—actually she doesn't do much. Her husbands are engineers, and her wife does most of the housework." He hesitated. There were no secrets of the confessional in the Unitarian church, but Hake had never allowed himself to gossip about his counselees. He said, "Her family is well off, and Alys has some sort of trust fund going for her. She has a lot of spare time."

Stanford nodded. "Explosive combination."

"Well, but that's not my fault, is it? I'm not responsible for what goes on in her head, am I?"

"No," the lawyer agreed, "you're not. Unless you did something to influence it."

"But I didn't. Or anyway, nothing serious. She's an attractive

woman, and I must admit I like her company sometimes. But I don't think you understand what it means to be a minister. There's an obligation involved, especially when it comes to a matter of counseling—it's like a psychoanalyst having sexual relations with one of his patients."

"Which never happens?" Stanford asked, twirling his double thumb-ring.

"Well, of course— Wait a minute. Whose side are you on, Stanford?"

"Oh, yours, Hake, that's the one I'm paid to be on. But if your only defense is that luring Alys Brant away from her legal mates is against the rules, I doubt we're going to convince a judge." He saw Hake's eyes on the thumb-ring, looked startled and then laughed. "You mean am I on the side of plural marriages? Don't even think it. This is my *personal* side. It has nothing to do with how I practice law. Let's get specific. Have you seen Alys Brant since, or immediately before, she left her family?"

"I saw her in church yesterday morning, yes. But I didn't speak to her. I haven't seen her in private for, I don't know, at least a month. I didn't even know she'd left them until last night."

"Um." Stanford made some notes on a leather-bound pad with a gold pen. "Your contention is that you're not a proximate cause, then."

"I guess not."

"Oh, that wasn't a question. I was telling you the position. All right, Hake. I'll talk to these people's lawyer and see what we come up with, and I'll be in touch. Is this going to hurt you with your church?"

Hake hesitated. "I don't know."

"It won't help any, I guess. Well. There's only one thing I want you to do before I talk to you again, and I bet you can guess what that is."

"Stay away from Alys Brant?"

"Why," said the lawyer, smiling and extending his hand, "you know, I think you're going to make a pretty good client after all."

Monday is supposed to be the minister's Sunday, and Hake had only a light schedule. Even so, he canceled all of it except one counseling session with the two gay Tonys, who were teetering on the brink of adopting a child and looking for support. It was only partly that he wanted to be supportive, more that he did not want to lose any part of his counseling role. Was this lawsuit going to hurt him

with the church? He didn't need the computer to answer that; it would wipe him out.

And without a church, Hake had only one skill to support him, and that one he didn't want to practice any more.

After he had sent the Tonys on their way, no closer to making a decision but less up-tight about it, Hake had the rest of the afternoon free.

He did not know what to spend it on. Exercise, his body cried; no, problems, demanded his mind. But which problem to tackle first? He could leave the problem of Alys to the lawyer. For the problem of Leota he could see no angle of attack. The problem of the Reddis seemed quite insoluble, except to stay out of their way. If he could. He felt quite exposed and a lot more helpless than he liked. How did everybody know so much about him?

But there was a problem he could tackle. When he left the training center Under the Wire he had not had time to turn in all his toys. Lock-pick, garroting wire, circuit testers—he fished them out of his bag, supplanted them with a few items out of his own toolbox and once again was a fully equipped undercover agent, with all the proper tools of the spook trade. Or most of them. Enough to go over the rectory, top to bottom, looking for bugs.

The toilet squatted attentively in the bathroom, for openers. That he didn't touch. It was no problem, anyway: avoid soliloquy while shaving, refrain from talking to self in bed. (It was not often that Hake's bed contained anyone else to talk to.) The telephone would be tapped, of course. Or at least tappable. There was nothing in the headset, so perhaps it would not be eavesdropping on him while hung up, but with the resources at hand he could not trace a tap farther down the line. He did not bother to try. Assume any phone conversation was heard; be careful not to say anything private on phone.

But that was all. And not enough. When he failed to uncover anything anywhere else in the house he sat back, puzzled. It was against all logic that the Agency would leave him so little surveilled. Not just at this moment, but for some time in the past—clearly they had studied him at length before they called him in. And not just the Agency. Leota had zeroed in on him with ease; how? But the best skills he had acquired Under the Wire produced nothing: nothing from the Agency; nothing from Leota's gang, whoever they were; nothing from the Reddis. Nothing even from some hypothetical private eye that Alys Brant's husbands might have turned loose on him.

He put the tools back in his bag, on top of the cluster of tapes he

had promised The Incredible Art he would listen to, real soon. Leota had said something about hypnotism, too, back in Munich. That was a puzzle, too, but not at this moment a very interesting one. So was Yosper's curious remark about hydrogen.

Hake knew where the hydrogen came from—vaguely. It was somewhere along the Persian Gulf, or perhaps the Red Sea—a thousand miles from his own boyhood kibbutz, a part of the world he knew from reading and talking, but had never seen. In a way, he thought he might understand why the Agency didn't want to use liquid hydrogen. In a way, it might almost do them credit.

When the Israelis destroyed the Near East's petroleum reserve with their shaped nuclear charges, they had not burned all the oil. But what was left unpumped was highly radioactive. If the hippies in Kuwait or wherever were now generating hydrogen by burning that oil, they were releasing radioactive isotopes into the world's air. No one had said that publicly that Hake had ever heard, but Hake was now quite ready to believe that there was a lot that was never said publicly. If there was a creditable reason, that had to be it. There would be no other reason to turn down fuel that did not in any way damage the environment, when you only had to look out of your window to see how badly the environment had been damaged. And it was not as though the United States were not importing fuel already. The Mexican and Chinese wells were still pouting ten million barrels a day into American refineries, even if their prices were becoming exorbitant. Especially *because* their prices were becoming exorbitant.

Anyway, was that how the hippies were doing it? He had heard something, somewhere, about solar power. The trick was to catch the energy of the sun in mirrors or lenses, boil sea-water pure, split the  $H_2O$  into its parts, chill the hydrogen into liquid, and pack it into tanks. Of course, the trick was more complicated than it seemed. To direct the sunlight to a boiler or still meant putting motors on the mirrors to follow the sun across the sky, meant keeping them clean, meant finding a place where there was plenty of sun and plenty of water and plenty of cheap land—and a deep-water port of a pipeline to moving the  $LH_2$  to where it was useful. But maybe they had solved all that.

If so, why weren't there places like that in America?

The answer was there were, but the economics of building square miles of mirrors were unfavorable. Still—what Yosper said must mean *something*.

But that didn't mean that Hake would find out what that meaning

was—not without more help, anyway. And he was getting tired of inactivity. It was still light. He called up for an appointment and spent what remained of the afternoon in the beach club sauna, soaking the residual aches out of his bones. Twenty laps in the startlingly cold pool, his regular two-mile run, a light dinner and a brandy, and he felt physically up to whatever was going to happen. He even felt able to put Alys and the lawsuit out of his mind, thus freeing it to resume its other concerns. He sat down before the computer terminal, thumbed it on, and debated what questions to ask it.

It had told him all he wanted to know about the sheik who owned Leota Pauket. It would not answer questions about the Agency, only responded with a question mark; no doubt there was a way of answering that question, but he didn't know it. He considered asking about case law in questions of loss of consort, but that was what he had a lawyer for.

What else?

There was the strange suggestion Leota had made in Italy. Hypnosis. What could he find out about hypnosis?

He remembered what Alys had done in the New York library, and set about interrogating the memory for simple texts on hypnosis; and began to read and make notes, beginning from the beginning.

If you jab a person with a pin, you expect him to hurt. If he doesn't hurt, or says he doesn't, his behavior is contrary to expectation. If you are of an inquiring turn of mind, you try to understand why he is behaving that way, and when you know the reasons, the behavior is no longer contrary. It is now what you expect.

This process of converting contraexpectational into expectational behavior is the heart of the scientific method. Intuitively one would expect that things would remain where they are, thought Newton. So why did the apple fall? And thus was born the theory of universal gravitation. Why are these photographic plates fogged? asked Becquerel; thus he deduced radioactivity.

Human beings are not as predictable as atoms or apples, but still there are some things we expect with confidence.

If John is jabbed, we expect him to feel it.

If Harry is walking across a room which he can plainly see contains an obstacle, we expect him to avoid stumbling over it.

If Jacqueline attempts to unclench her fist, we expect her to succeed.

If Wilma cannot remember the color of her kindergarten teacher's hair, we expect the memory to stay lost; and if all of these expectations are defeated we ask why. Is John a leper, Harry blind, and Jacqueline paralyzed; and has someone just shown Wilma a Kodachrome of her kindergarten class? Say, no. But say instead that we discover that someone has suggested to each of these people that they behave as described. Now we are on the track of a solution to these puzzles, and we learn that the solution has a name. It is called "hypnosis."

We have not yet reached the Newton-Becquerel point. We don't yet have a theory, only the observation that under certain circumstances contraexpectational things happen and they do it pretty often. Often enough so that they become expectational!

But there is a theory. In fact, Hake discovered, there were God's own quantity of theories, all the way back to Franz Anton Mesmer's own in the year 1775.

Mesmer was a doctor, and he thought he had found a way to cure some kinds of illnesses without nostrum or knife—considering the state of medicine at the time, a very good way to go about it. It rested on what he called "animal magnetism." If he made certain mysterious passes with his hands near a subject's head, and then commanded the subject to do certain things, the subject would do them. Even if they were quite strange. Even if what he was told to do was to get well. Even when, you would think, they would normally be impossible. He could command the subject to go rigid, and get him stiff as a board. He could command the subject to feel no pain. Then he could pinch him, poke him, even burn him. And if he asked if it hurt the subject would say the 18th-century French equivalent of, "Golly, no, Dr. Mesmer, in fact I kind of like it."

All that was well reported, and seemed to be objectively true. The patients said it was true. Observers said it was true. Dr. Mesmer himself said it was true. He then went on to say he knew *why* it was true. He said there was a magnetic fluid—he even allowed it to be called a "mesmeric fluid"—which surrounds everyone, and the passage of the hands through the fluid rearranges it to change the state of animal magnetism in the subject, this producing the effects described.

That's where he made his mistake, because scientists then went looking for the fluid. There isn't any. It doesn't exist. So decided the king's commission to look into the matter, in 1783.

Well, all right, what of it? The theory was wrong, but the process still worked. The neurologist Charcot said that somehow "hypnosis,"

as it came to be called, produced basic neurological changes, which were the things that did the job—that's a neurologist for you. Bernheim wasn't a neurologist, so he said it was just "suggestion," and proceeded to go into business for himself with his own patients. Between the schools of Nancy and Salpêtrière insults, denials, and objections flew and continued to fly for more than two centuries; but, whatever you called it, the thing did just what Mesmer had claimed for it. Even more. People had their teeth filled under hypnotic commands to feel no pain, and got up from the dentist's chair smiling and grateful. Women had babies with no other anesthesia, and laughed and chattered through the delivery.

There were, to be sure, a few little anomalies.

As electronic technology began to invade medical, experimenters reported some puzzling results. If they measure the electrical potential of the nerves affected, no matter how comfortable the subject said he was, those nerves were twanging. And if they got the subject into automatic writing, his mouth might say, "Gee, no, that doesn't hurt," but his hand would be scribbling, "*Liar.*"

And all that was very interesting, but what did it mean?

Hake's feet were getting cold. He put on his slippers and padded into the bathroom to make himself a glass of instant coffee. He peered at himself in the mirror while he waited for the water to run hot, absently aware that the bruises were fading, half listening to the whir of the ventilator and the diffident gurgle of the john, his mind full of hypnotism. He now knew more than he had ever wanted to know about the subject, but not the thing he looked for. Maybe he should have been reading *Trilby* instead of what the computer was telling him? If the Agency was a Svengali, as Leota had claimed, would there be anything about it in the open file?

He returned to the keyboard and punched out an inquiry about U.S. government agencies using hypnotism; and when the snowflake of possible second-order subjects appeared, keyed in **Undercover operations**.

The answer was what he had expected. It was:?

And to that question he still had no answer. He leaned back in his old plastic-padded swivel chair, sipping the lukewarm black coffee and scowling at the bright green letters on the CRT. And tardily he realized that the toilet was still running; not only that, but splashing and gurgling louder than ever. "Oh, Christ," he said out loud. Curmudgeon! As usual, he had forgotten to check him for his evening message. If that was all it was— It could be a lot worse:





it could be that they were monitoring his use of the terminal, and he was about to find himself in a trouble he did not look forward to.

But when he pressed his thumb onto the pattern-recognizing moire of the flush lever, the trouble was from another direction. "Hake!" growled the tinny, taped voice of Curmedgeon from the flush tank. "You're carrying your cover too far! First thing you know that bunch of pagans you call your congregation is going to start wondering why their minister is getting so fired-up about international affairs all of a sudden, so lay off. Talk about the whooping crane and the sanctity of interpersonal relationships for a while, hear me? That's an order. Do you remember what you're supposed to say when I give you an order? Let's hear you say it!" There was a tiny beep, and then only the faint whisper of the running tape, waiting.

Hake remembered. "I understand and will comply," he said unwillingly. A moment later the tape sound stopped, and the toilet was only a toilet again.

Reminded, Hake thoughtfully used it for the purpose for which it was intended. So somebody in the congregation had reported yes-

terday's sermon to Curmudgeon. No one from International Pets and Flowers had stayed for the service. Or no one he had recognized. Of course, it didn't have to be a person. It could have been some of those fine little hair-thin microphones he had seen Under the Wire—glued to the side of the pulpit, buried in the molding behind him, maybe even woven into the nubbly new carpet. Whatever. He was being rather closely watched. He washed his hands and went back into his bedroom, and Alys Brant said, "Hello, Horny. I hope you're glad to see me."

Hake stopped cold. Alys was propped on his bed, feet demurely tucked under her. She had done something to her hair, but it had not made her less attractive; the way she looked was sweet and trusting. Nevertheless! "What the hell are you doing here?"

"Please don't be angry, Horny, dear. I need a place to stay. Just for a night or two, until I can get to my aunt's place."

"Alys," he said, "for Christ's sake! Don't you know Ted and Walter are already suing me for taking you away from them?"

"Oh, them," she said. She shrugged and stretched. "I'll testify for you, Horny. You had nothing to do with it. I made up my mind to leave them long ago. I just need to be free—good heavens, you know all that; you listened to us complain and fuss and go over the same thing over and over again. So I moved out. I've been staying with—a friend. But that got impossible, too, so I came here. I just don't have any other place to go, Horny."

"It's completely out of the question, Alys. I spent this morning with a lawyer. He said I shouldn't even see you at all."

She sat up, covering a yawn. "Nobody's ever going to know. Except Jessie, maybe. But she's very loyal to you. Horny? Have you got anything to eat? I've been walking for hours, and carrying those bags." She looked toward an overnight case and a plastic shopping bag, neatly tucked under the computer terminal. "Not much, are they? But all my worldly goods."

The terminal was still displaying the last few lines of dialogue. Angry, Hake walked over to it and snapped it off.

"I already saw what was on it," Alys pointed out. "and I was listening to you in the bathroom while you were getting ready to tinkle. You were talking to somebody. And I've been meaning to ask you for some time what you were into with dear old Leota Pauket. It's some kind of spy thing, isn't it, Horny? Would you like to tell me all about it while we eat?"

He sat on the edge of his bedside armchair and regarded her. The

woman was full of surprises. "How do you know Leota Pauket?"

"Went to school with her. I hadn't seen her in years—then, last spring, I just bumped into her on the street. Right outside the rectory here, as a matter of fact. We had a few drinks, she wanted to know what was happening in my life. Well, we had just been through one of those long, stupid sessions with you, and I told her all about it, and you seemed to fascinate her. She wanted to know all about you. Do you remember that really nasty weather we had, just before we went off to Europe with those kids?"

Hake nodded. "When you were here for counseling." It wasn't hard to remember; that was the session that had been interrupted by his summons to the Agency.

"Well, that was when it was."

"You didn't say anything to me."

"Well, really Horny! Who should I? I had no idea you knew her—in fact, I guess you didn't. But then in Munich, she was the one who brought you back to the hotel. She was wearing a wig, but it was Leota, all right. As soon as she saw me getting out of the elevator she ducked out. And then I got a note from her. Real spy stuff: 'Please don't mention me, ever. I'll explain when I see you. It's important.' Something like that."

Horny Hake sat thoughtful for a moment. At least that explained how Leota had turned up on the bus to Washington. She must have known he was being drafted into service as soon as he did.

But it didn't change the present realities. "Not withstanding all that, Alys, you've got no business here now. I'm being sued! What's going to happen if the lawyers find out about this?"

"We'll just have to make sure they won't find out, right, Horny? I mean, it looks like you're pretty good at keeping secrets. You surprise me, honestly you do."

He groaned. "Alys, I give you my word, you're getting into more than you can handle. Is there any possible way I can believe that you'll forget all this?"

She shook her head. "Huh-uh."

"This isn't any game! How do you think I got these lumps? People get killed!"

"It sounds really interesting, Horny."

"This room could be bugged right now. If Curmudgeon finds out you're involved I don't know what he'll do."

"'Curmudgeon.' That's a name I hadn't heard before." She stood up. "Let's go in the kitchen and get something started, and then while we're eating you can begin at the beginning and tell me all

about it. You can take your time. We've got all night."

## II.

Hake woke up from a profound and actively dreaming sleep, and did it instantly.

In the split second between the moment he realized he was awake and the moment he opened his eyes, he achieved a synoptic flash of memory. It took in everything. It included finding Alys in his room, talking to her, eating with her, and—by what had seemed at the time a logical and inevitable progression—going to bed with her; and he even knew at once what and who had awakened him.

The figure standing beside his bed, tall, skinny and silent, was Jessie Tunman. Her eyes glittered, and she was soundlessly shaking his shoulder. She glanced contemptuously at the nude and sleeping form of Alys Brant, and retreated to the door.

Hake pulled his robe on and followed her. He whispered savagely, "You have no right coming into my room!"

"Her? I don't care about *her*." The glitter in her eyes was triumph. "Orders from Curmedgeon. Get yourself dressed and come out into the office."

He stopped with the sash of his robe half knotted. "What do you know about Curmudgeon?" he demanded.

"Just do it." He had never heard that tone from her, a senior-citizen gloat over the smart-assed kid. She did not linger to explain. She turned and marched down the hall, and even the way she walked was smug.

Of course, he thought, Jessie was the one! She had spied him out for recruitment to begin with. Her previous career had been "government employee." She hadn't lied on the job application, she had merely failed to say what part of the government she had worked for. And no doubt she had been observing him carefully all the while she typed his sermons and filed his mail, judging from arcane clues (whether he took the liverwurst on rye or the cheese on a toasted roll) what his performance would be in the field. He had had no privacy at all! Jessie checking him out for the Agency. Alys reporting to her old school chum, Leota. He might just as well have lived his life in Macy's window.

The way that Alys lay, curled comfortably in one undemanding corner of his bed, was exactly as she had been when he woke. Her eyes were closed. There was no doubt in Hake's mind that she was

wide awake behind them. Shaved and showered in less than five minutes, he pulled on his clothes without speaking to her. It was convenient for both of them that they should agree to pretend she was still asleep. For her because she did not have to take part in this scene; for him because he was not sure what he wanted to say to her. Not until he found out what Jessie had to say, at least. Not even then, most likely, though there was no doubt that he would have to say something anyway.

In the office, Jessie had turned on the heater against the early-autumn morning chill, and swept the collating table clean. She was laying out a kit of tools and gadgets Hake had seen before, but not here: an instant camera, a box of various printed forms, bottles of ink, soft cloth pads. One of the instructors had run through them for the class Under the Wire. It was strange to think of Jessie being there, no doubt many years before him.

She glanced up. "You look all right to have your picture taken," she observed.

"Are you going to tell me why?"

"Of course I am, Horny, only now hold still a minute. No, not there. Move away from your diploma. I don't want to have to bleach out anything on the wall—there." Jessie's little camera clicked, and in a moment she spun out half a dozen passport-sized photographs. "Bruises show," she said critically. "Can't be helped. Now you do me." She looked around for a different bare wall, found one and handed him the camera. "I fooled you, didn't I?" she said.

Hake got her in the viewfinder and waited till her expression was at its smuggest before pushing the lever. "Well," he said, "if I'd used my head I would have figured out you were the one who recruited me. I knew you used to work for the government."

She retrieved the camera and sighed, studying the pictures. "What a youth-oriented culture we live in, Horny. They retired me six years ago—of course, you never really get out of the Agency; you'll find that out. But they put me on inactive status, except for odd jobs now and then. Like checking you out." While she talked she was trimming the edges of the pictures. "We've been promised an age of enlightenment, you know, when we show we're worthy—but it seems a long time coming." Mournfully she rummaged around in envelopes of printed forms. Then she brightened. Nothing could permanently dampen her mood. "Anyway, I've got one good mission left in me! And we're going to do it."

"We?"

"You and me, Horny—and others. This is a big one. I got my

orders by pouch, six o'clock this morning."

Hake kept his temper below boiling, not easily. Nothing the woman had said had been a plus for him, especially the idea of doing some sort of mission in her company. And she was so very pleased with herself. Had every right to be; Hake was not quite angry enough to bring her down. He only said, "Why didn't Yosper tell me when he saw me?"

"Because he didn't know. I'm senior to him, too, you know! Or maybe because the Agency is a little worried about you, you suppose? Couldn't blame them. Getting yourself sued, getting your car blown up by terrorists— Oh, you better get out of here while you can, Horny. Let things settle down. You'll thank me in the long run. You were dying on the vine in this dump. Sign here," she said, handing him an Illinois driver's license made out to "William E. Penn." She said, "That's you, for the purposes of this mission. Practice signing a couple of times first so you'll get it the same on all of them."

"All of what?"

"All your ID, dummy! Passport. Social Security card. Credit cards. Visas for Egypt and Al Halwani. Then go eat. By the time you've had your breakfast I'll have all your documents ready, and mine too. So open the church safe before you go. I can't take this stuff back to my room—and you don't want to leave it out here for anyone to see, do you?" Picking up a new set of forms she said, "And get rid of that girl right away."

He was thinking about Al Halwani—wasn't that the place Gertrude had mentioned in the hospital?—but he flared up. She stopped him. "It has nothing to do with your sex life—badly though you handle it. That's orders."

"Why?" he demanded.

"So you can flush your toilet in private. There should be instructions for you on the tape by now."

He didn't have to get rid of Alys. She was nowhere in sight.

He made sure of it by looking in every closet and behind every door, but she was gone. No doubt she had left by the back way. It wasn't a permanent solution; her bags were still present.

Alys intended to return, and it was evident that she had no doubt he would let her in. She had had no doubt the night before, either; and she had been right. Why, Hake demanded fiercely of himself, why is it that everybody else in the world knows exactly what they want of you and knows you will give it to them?

He had no answer. So he did what Jessie had wanted of him and

had known he would do. He retired into his bathroom, placed his thumb on the lever and flushed the toilet.

"Well, Hake," said Curmudgeon's curmudgeonly tones from the hidden speaker under the flush tank, "must be getting a little hot for you in Long Branch, eh? All right. You're leaving in three days. We've arranged your substitute, same guy as last time, and Jessica Tunman will provide you with documents. Take this down. Friday, fly to Egypt with Tunman. Reconnoiter the installation marked on the map in Al Halwani. Then proceed surface transport to Al Halwani City. Once there you will apply for a job at Al Halwani Hydro Fuels at 1500 hours on the 23d. When hired, start work; your language skills will give you priority. You will be contacted with further instructions . . . ." There was a long pause. "I'm waiting," said the recorded voice.

Hake said quickly, "I understand and will comply." The tape shut itself off, and there was silence in the bathroom.

It was still a dangerously silly way to conduct the business of a spy agency. But his orders were clear.

Al Halwani.

And Leota was in Rome.

The day dragged past. His mind was on the other side of the ocean, but he managed to get through the round: counseling, meetings, attending to correspondence with Jessie (her eyes glittering with joy, her pencil dawdling as she took his dictation, but insisting nevertheless that they had to continue with their regular duties until it was time to leave). She went home early. "Woke up before my time this morning, Horny. I need to catch up on some sleep."

He changed quickly into the sweatsuit and jogged his mile on the beach in the dwindling daylight. Al Halwani Hydro Fuels. The balance of payments. What payments ever went to Al Halwani? For hydrogen, just a trickle. That's all hydrogen amounted to.

Oh, sure there was a time when there was a constant torrent of gold flowing into the Near East, Al Halwani included. But that was when oil flowed out. When the Israelis blew out the oil domes and set fires raging out of craters a half-mile across, oil stopped. Not all of it. But only a trickle survived. So the oil sheiks had gone to where their Swiss bank accounts were; and the fraction that survived, unburned and undamaged by radioactivity, was now operated by whoever remained on the scene to operate it—sometimes quite strange people. It was not enough to affect anyone's balance of payments.

And who would you pay it to? Oil had been the only reason there

was for cities in places like Al Halwani, Abu Dabu, and Kuwait. When the reason disappeared the cities died. The nomad people became nomads again. The buildings were still there, and the hotels, and the museums and concert halls and hospitals. But there weren't any jobs, were there? He tried to remember Gertrude's postal card. It didn't suggest a thriving metropolis. A few tourists to keep the hotels scratchily alive. And, yes, over the years immigrants had come to the Persian Gulf—the kind of kids, like Gertrude's sister, that had once been called "hippies": political refugees, writers, people who did not hold regular jobs but could subsist almost anywhere that was cheap. Al Halwani was a little like Paris in the 1920s, and a lot like the Greek islands in the 1960s. Part Greenwich Village. Part Haight-Ashbury. And if they were managing somehow to squeeze out a few dollars by making and selling liquid hydrogen to the more prosperous countries, who would begrudge them that?

By the time he trotted back up the beach it was dark. In the streetlights he saw Alys Brant, peering curiously into a car parked near his door. The car turned on its lights and whined away as he approached, and Alys greeted him by handing him a sack of groceries. "Do you like chicken a l'orange, Horny? And you do have a wok, don't you? Or a big frying pan will do."

"I thought you didn't like to cook," he said.

"I want to earn my keep." She took the key out of his hand, unlocked the door and preceded him inside. "Just for a little while, you know, Horny. And I'm really awfully grateful to you for putting up with me."

He really ought to get her out of his life once and for all. But the damage was done; anyway, he would be off on another mission in a few days; anyway—anyway, Hake admitted to himself, the idea of letting somebody else cook his dinner was not unattractive. He postponed conversation and headed for the shower. The hot water felt good. The toilet was only a toilet, with no new confusion to add to his life. And as he was toweling the phone rang.

Before he got to it Alys had already answered. Irritated, he said, "I'll take it."

The caller was The Incredible Art. "Horny? How would you like to be on TV with me Saturday night?"

"Television? What for?"

"Because you're an interesting person, Horny. It's a talk show. I told them about your sermons; they don't get many Unitarian ministers, and anyway they're always looking for good talkers. Want



to do it?"

"Well, I have to admit it's an exciting idea!" Then Hake remembered reality. "But I can't. I, uh, I think I have to go out of town."

"Again?"

"I guess it's been happening a lot, at that. I'm sorry, Art. How about a rain check?"

"Sure." The telephone voice hesitated. "Horny? If you are in any kind of trouble—"

"What kind of trouble would I be in?" Hake demanded, falsely cheerful.

"Well, none. But if you ever are, I'm on your side."

Hake said awkwardly, "Thanks, Art. I'll remember."

"Any time. And give my regards to Alys Brant."

Hake dressed quickly and said to Alys as soon as he saw her, "Don't do that any more. Don't answer my telephone. Don't you know what's going to happen to me because of you?"

"Oh, that silly lawsuit. Ted's just angry, Horny. He'll cool down. So have your dinner, if you don't get to it right away." She sat down, smiling. There were candles on the kitchen table, and a bottle of white wine. "Don't you want to know what I've been doing today, Horny?"

He cut into the chicken, which was in a soupy, sticky sauce. "I guess so."

"Of course you do. I spent the whole afternoon at a travel agency, looking at South Seas folders. Tahiti! Bora Bora! Don't they just sound marvelous? How do you like your chicken?"

"It's very fine," Hake lied gallantly. But at least the stirfried vegetables were edible. "I thought you were going to your aunt's."

"Oh, she's as much of a drag as Ted and Walter. She'd just tell me I belong with my husbands. I don't have to go to New Haven to hear that. But at least I'll be out of your way before you go to Cairo."

Hake dropped his fork. "How the hell do you know I'm going to Cairo?"

"The tickets were in your pocket when I hung up your coat, dear. Is that all you're going to eat? I didn't make any dessert, but we could just have some more wine . . ."

Hake said tightly, "Those tickets belong to a friend of mine. Old Bill Penn. We were, ah, in the seminary together."

"The passport was there too, dear, and it had your picture on it." She smiled forgivingly, and added, "But I didn't tell you the most exciting news. Or maybe you know it already? Is that why you're going to Africa?"

"I don't know what you're talking about," he snapped.

"Leota, of course. I had an idea while I was at the travel agent's, so I put in a call to her in Rome. Not to her, I mean. To that Sheik Hassabou, since she's part of what they call his retinue."

That stopped him. "Did you talk to Leota in Rome?"

"She's not there any more!" Alys caroled. "Her sheik has taken her off to his desert tent! My god, Horny, that sounds even more romantic than Tahiti!"

"What tent?"

"Well, I don't suppose it's a real tent. It's in a place called Abu Magnah. I couldn't get through to her, but she's there all right. It's in the middle of the desert. He goes there *pour le sport*, they say. I guess we know what sport he's interested in—oh, sorry, Horny."

He said bitterly, "Forget it." He poured himself another glass of wine and stared at it. He remembered the map of the Near East very clearly. Cairo was there, and Al Halwani was down toward the Gulf *there*. And Abu Magneh was not far from right in between. The unpleasant stirring in his groin returned. Sports cars, surfing, and sex; and two out of the three were not likely to be common in the Empty Quarter.

Alys had cleared the plates away and was standing behind him, her fingers on his neck muscles. "Poor old Horny," she said, "all tensed up. You're like *iron*."

It was true enough. He could feel the strain in the shoulders and arms, across the chest, even in the abdomen. All the muscles he had painfully built up since the days in the wheelchair were now turned against him. "I could make all that go away," she said softly.

"Thanks. I'm in enough trouble with that already."

"Silly! I didn't mean sex—although that's always good, too. And I'm just not strong enough to massage you when you're like this." She was kneading his shoulders very agreeably, but now she stopped, just resting her hands on him. "No, we'll just relax you, Horny. We're going to relax every muscle of your body. You're going to be all relaxed, and we'll start with your feet. You can feel your toes relaxing now, and—"

He sat bolt upright. "What the hell do you think you're doing?"

"I'm just relaxing you, Horny," she said sweetly. "I learned it in college. It's not really hypnotism, just a kind of suggestion. Do you feel your toes relaxed? And your soles of your feet, they're getting all comfortable and relaxed too, and your ankles—"

"I don't want to be hypnotized!"

She let go of him and sat down again at the table. "All right,



dear," she said. "Let's try something else. Maybe you should just let it all out. Tell me what's getting you all up tight."

Hake swallowed the rest of his glass, reached for the bottle and then checked his hand. "I don't want any more wine. I want some coffee."

"It'll just get you more tensed up, Horny."

"I *need* to be tensed up! And you're leaving here *toni*— tomorrow morning at the latest," he added.

"Whatever you say, of course, dear," she said, heating water for his coffee. "Well, if this is to be our last night together, let's make it pleasant, shall we? Do you want to look at my travel folders?"

"Not a bit," he said.

"No, somebody else's trip is never very interesting, is it?" She poured coffee and brought it to him. Determined to make conversation, she said, "Is Art coming over tonight?"

"No."

"Oh. He's good company for you, Horny. You really should have more friends." When he didn't respond to that, she tried again. "Do you believe in teleportation, Horny?"

"Oh, God. I get enough of that from Jessie."

"Well, it's just funny. I keep seeing this same man all over. He

was outside this morning, and he was sitting on a bench on the boardwalk when I came back from the grocery store, and then he was in a car right outside the house while I was waiting for you. Now, he really couldn't have done that, Horny. There just wasn't time for him to get from one place to another."

"You just weren't watching, probably. No reason you should be."

"Yes, I was. I can even tell you what he looked like. Some kind of Indian, or maybe Pakistani. Young. Rather good-looking, in a way—"

Hake put his coffee down. "Did one of them have a scar on his face?"

"Why—maybe. I didn't look that closely but, yes, I think he did. What's the matter?"

"Just relax," said Horny, standing up. "I want to take a look around."

But there was no sign of either of the Reddi twins anywhere outside the parsonage, front or back. Hake stood quiet in the darkness of the porch for a long time, watching everything that moved on the avenue. Cars, some high-school kids, a couple of elderly people tottering toward their senior-citizens' rooming houses. Nothing that looked like a conspirator.

When he came back into the house Alys was standing in his private sitting room, looking puzzled. "Horny! Do you *mind* telling me what is going on?"

"Sit down, Alys. I mind. But I'm going to do it anyway."

He went into his bathroom and turned on the shower, closing the door behind him. Back in the sitting room, he took a seat facing her. "You have to do one of two things right now, Alys. You have to promise me that you'll keep you mouth shut about everything I'm going to say. Or you have to leave here this minute."

"Oh, Horny!" she gasped, obviously delighted.

"God damn it! I'm serious."

"I promise!"

"You used to teach the sports-and-art classes in Sunday school. You can help me. First off, that wasn't one man you saw, it was two. They're twins, and they're the ones who blew up my car. They don't fool around. They gave me most of these bruises, and if they know what I'm doing they'll probably give me worse."

"Horny."

"Second," he said, "I didn't know where Leota was. But now that I know, I'm going to rescue her. You know I'm mixed up in something

secret; well, you're better off if you don't know any more than that. But I'm going to take a chance and go from Cairo to Al Halwani by way of the sheik's place, and I'm going to get Leota out of there."

"Horny! You're such a nerd! How can you do a thing like that?"

"I don't know. But I'll do it. Maybe I can even do it legally. Has-sabou had no right to take her out of Italy, that's part of the contract, so he's violating the law. Anyway—I'll do it. But I need to doctor up some documents before I do, and that's where you come in. I don't have much talent that way. Come in the office with me."

As he was opening the church safe, he said over his shoulder, "You don't have to do any of this. Outside of the Reddis, there are other risks. You might get in trouble with—the people I work for."

"You mean the government," she said, nodding. "Tell me something. Why won't you get in trouble yourself?"

"Maybe I will. But I'm going to call up on my toilet—oh, never mind that part, Alys. I'm going to put in a message saying that I left early because the Reddis were threatening my life. I think that might cover me—anyway, it doesn't matter a hell of a lot." He had laid out the little forger's kit. He said, "Let's see. I need to change the date on the Egyptian visa. Call up PanAm and get the first flight to Cairo. Should I change the passport to a different name? Maybe I should. Or—"

Alys took his hand, "Horny?"

He look around, irritated. "What?"

"Take me along."

He was so startled that he forgot about being irritated. "That's ridiculous, Alys!"

"No, it isn't ridiculous."

"It's impossible."

"It isn't impossible either. If you can cook up documents for yourself, you can cook them up for me, too. And Leota was my friend longer than she was yours."

"Just forget it, Alys. It's dangerous."

She leaned forward shyly and rest her cheek against his. "It's also *thrilling*, Horny. Do you know what you're talking about? Just my lifelong secret dream, that's all. Sheiks that carry their women off on white steeds. Real men!"

"More likely to carry somebody off on a hydrogen buggy," he snarled. "And those real men do funny things to their real women."

"Oh, Horny." She moved back and looked at him fondly. "Dear, Horny, is it possible that you don't think I can handle a man? Trust me in that, if nothing else. So I regard it as settled. I'll give you a

hand with the documents . . . only, Horny? There's one thing about the class I taught in Sunday school. Jim Tally taught the art. I was their judo coach. But if Jessie Tunman can forge a passport, I can too."

### III.

The elderly Egyptian pilot twisted in his seat, bawling something. He was pointing down at the desert; and, although Hake's rusty Arabic had been coming back to him, most of what the man said was lost. "Drive the airplane," Hake ordered. From the way the Egyptian handled the little prop-jet Hake suspected he had got his first flight training in MIGs, from Soviet advisors before the Yom Kippur war.

"What's he trying to tell us?" Alys asked in Hake's ear.

Hake shrugged. "Something about the wind being bad. I think it's about that stuff down there." They both craned to look down. The Empty Quarter was empty, all right: rocky desert, not even a herd of goats or the black tents of a Bedouin camp. But parts of the ground were a funny color, browish green and strangely out of focus, as though an oily fog lay over the scraggly bushes.

"I wish this plane had a bathroom," Alys said. She was playing the part of a bored American tourist extremely well. Pretty. Well dressed, in her three-piece gray shorts-suit with a puff of scarlet silk at her throat. It was a wholly unsuitable costume for the Empty Quarter, but for that reason all the more suitable for someone who wanted to look like a tourist to wear.

It occurred to Hake that her fidgety boredom was not entirely feigned. It was entirely likely that she was having second thoughts about this adventure. The night before in the Cairo hotel, both of them out of it with jet-lag and fatigue, she had lain rigid beside him in the immense king-sized bed. When he had moved to touch her, more out of compassion than lust, she had jerked angrily away. He could understand her qualms. The closer they got to Abu Magnah, the more of his own qualms turned up. What had looked easy from half a world away looked more and more daunting at first hand.

"What's that moron doing now?" she demanded.

The pilot had unstrapped himself and was staggering back to them. In Egyptian-Arabic he shouted, "The oasis is coming up in just a minute. Did you see the locusts?" Hake turned to peer back along their course, but the sweep of the wing blocked his view. "Too bad you missed it," grinned the pilot. "Now fasten your seat belts.

If God wills it, we are about to begin our descent in the landing pattern." He returned to the controls and a moment later, as he took over from the autopilot, the plane dipped one wing and began to circle to the left.

As the undercarriage rumbled and locked in the landing position, Hake got his first glimpse of Abu Magnah.

It was much more than he expected. It looked like the interlocking-circles symbol for the Olympic games, but on a huge scale—immense disks as much as a mile across. They were irrigation circles, and where they interlocked was no cluster of tents and palms but a city. Wide roads threaded in between the farm plots, almost bare of traffic.

It had been Hake's notion that Abu Magnah was a private pleasure dome of Sheik Hassabou's. It was bigger than that. There were at least fifty snow-white, dome-shaped buildings laid out in city blocks; minarets and mosques in white and gold and darker colors; a sprawling building like two dominoes joined together with a hotel sign on top of it; and, out in the farm circles, surrounded by walls, two or three story-book palaces, with pools and gardens. All in all, it was daunting. And quite new. There were few trees, because Abu Magnah was not yet old enough for trees, though a bright green pattern of seedlings showed where pine groves would be one day, and a scattering of gray-green promised olives. At the edge of one huge circle north of the city, dark brown and damp earth only lightly flecked with the beginnings of a crop of some kind, there was a rectangular tower taller than any of the minarets. Scaffolding showed that it was still under construction. Then the airplane dipped and twisted, and a runway was rushing up to meet them.

They went through the haphazard customs formalities, and the pilot was waiting for them at the hotel van. "Pay me now, please," he said.

"No. Why?" asked Hake. "You still have to take us south."

"But if you pay me here with your credit card it will be in the sheik's currency, which is tied to the Swiss franc. Besides, how do I know you will not go off without paying?"

"Well—" said Hake, annoyed, but Alys Brant moved in between them.

"Not a chance," she said firmly, and tugged Hake into the van. "Oh, Horny," she sighed, settling herself, "you do let people impose on you. You must have a lot of personal charm, why else would I have let you talk me into this crazy scheme?"

With an effort, he didn't answer. He clamped his jaw and stared

out of the van window. There was not much traffic apart from themselves—none at all to pass, except for a huge machine that looked like a snow-removal truck and turned out to be a sand-sweeper. But the wide road was banked like an autostrada. If it was not used often, at least it was used when drivers wanted to go fast. And as they passed one of the walled compounds, borne on the hot wind through the open windows of the hotel van, Hake heard what sounded like rushing water. A waterfall? How preposterous, in the middle of the Empty Quarter!

How formidable, too. He was surrounded by evidences of wealth and power, and who was he to oppose them? Not to mention that formidable power he worked for, with whom he would sooner or later have to reckon.

"Ahlan wa-sahlan," said the formally dressed clerk at the registration desk, offering a pen.

"Inshallah," responded Hake politely. He signed in, one eye on the signature on his passport to make sure he had it right, and they were conducted to their suite. They had three bellmen to carry their four small pieces of luggage—"I must do some shopping," Alys whispered in the elevator—and all of them fussed about, opening and closing drapes, trying gold-plated taps in the bath, adjusting the air-conditioners until Hake handed them each a fifty-riyal coin. He closed the door behind them, stood thoughtfully for a moment, and then began to rummage in bureau drawers until he found, first, a copy of the Q'ran, and then what he was looking for: a leather-bound, gold-stamped little volume that was the telephone directory for Abu Magnah. The curlicued script was easy enough to read, surfacing in his mind out of childhood memories as he needed it. But he wasn't actually reading it. He didn't exactly know what he was looking for, and what he was mostly seeing was the tenuousness of his plans. 1, Go to Abu Magnah. 2, Rescue Leota. 3, Figure out what to do next. Even as an overall strategic intention it lacked focus. And tactically . . . where did one begin with step 2? It had seemed even possible, back in Long Branch, that all he would have to do was go to the local police station and report a kidnaping. But in this oasis town, fiefdom of Hassabou and his relatives, that was not even a hope.

Alys came out of the bathroom, smiled at him and began to unpack: her cosmetics in a row on the mirrored dressing table, her toiletries in the bath, her clothes in the top drawers of the largest chest. "If you'll give me one of your credit cards," she said, "I'll get whatever else I need this afternoon. You can put your own stuff in



that other bureau."

"Don't get settled in," he said. "We're only going to be here three days at most."

"But we might as well be comfortable while we're here. Don't worry, Horny. I can whisk all this stuff back in the bags in two minutes—after you figure out what we're going to do, I mean."

"Fine." He got up and gazed out the window. Hot as it was, the streets were full of people, a League of Nations of the Arab world. Some of them might help, mightn't they? A little baksheesh, a clever play on old blood feuds—he could see Jordanians and Yemenis, even an Ait Haddibou Berber in white burnoose and headdress. All he had to do was figure the right ones to approach. His previous experience as a spy-saboteur was not much help; it had led him to a sort of James Bond conviction that somewhere along the road from the airport, or in the lobby of the hotel, some swarthy Leventine merchant or deferential Annamese would beg a ride, or ask for a light, and turn out to be an ally. It had not worked out that way. He was on his own.

"What's this stuff, Horny?" Alys had finished her own unpacking and started on his, and she was holding out a batch of microfiche and tapes.

"Oh, that. Forgot I had them." He had carried them to Texas and Italy after The Incredible Art had offered them to him, and never looked at them. They did not seem to offer any help now.

"Uh-huh." She put them in a top drawer, closed it and sat down to regard him brightly. "Let's see," she said. "You haven't told me what we do next, but maybe I can figure it out. Since we're supposed to be tourists, we ought to tour. We can look this place over, and see how to get at Leota. They must have some picture postcards in the lobby. Maybe a map. I'll bet we can piece together quite a lot of information, just by sightseeing and so on. And then, by tonight, we'll be in a position to make a plan. Am I right?"

Hake studied her innocent face for a moment, then grinned. "My very thoughts," he said. "Let's go."

Where the two wings of the hotel joined, the architect had put in a revolving dining room. They ate in the turret that night, and as the restaurant turned Hake could see the sheik's palace, floodlit in pink and blue under the bright desert night sky. Now that they had seen it close at hand, it looked more formidable than ever . . . but maybe, Hake thought, he was just tired.

It had been a tiring day. Alys had found postcards and maps easily

enough. After ten fruitless minutes talking about tour buses with the concierge—none of them went to the right places, and Hake could not find a way of explaining what the right places were without giving away more than he wanted to say—they had walked out the hotel door and been besieged by taxi drivers, thrilled with the notion of being hired for an afternoon's sightseeing. Hake picked a displaced Moslem Armenian named Dicran (least likely to notice anything strange about his Arabic, while he was still practicing it), and they had driven around for three hours. Dicran's over-the-shoulder commentary was a gloss of what he deemed the romantic and strange—white Mughathir camels swinging along, ridden by the local police; mosques for Sunni, Shiite, and Alawaite Moslems; churches for Druses, Dervishes, and—yes—even Christians. But he had been proud to show them Sheik Hassabou's palace, at least from the farm highway that ran past its walls, and to confide in them, smirking, about the electrified fences inside what looked like green hedges around the harem. Not to mention infra-red alarms, and armed guards at all the entrances. He had insisted they visit an *aipursuq*—Hake had puzzled over the word for a while, then laughed as he recognized "supermarket"—to buy local cucumbers, pomegranates, and figs; and they had picnicked on real grass, just across the road from the palace itself. Dicran had been a mine of information. But, when you put it all together, how much closer were they to rescuing Leota? Or even to making a plan?

Not much.

But here, in public, with the head waiter bringing them immense old-fashioned menus, they couldn't talk about it anyway. And there was always the chance he would think of something. As the waiter strolled gracefully away, Alys giggled and leaned closer to Hake. "He's wearing eye shadow!" she hissed.

"That's kohl, Alys. It doesn't mean he's gay. They need it to protect their eyes from the sun."

"At night?" She winked and returned to the menu.

She at least was having a good time, especially when she glanced up over the menu at Hassabou's pink and blue palace, and seemed almost to stop breathing. It wasn't fear. It was excitement. There was something about the idea of being held so closely that thrilled her. He almost thought she envied Leota; but, as she turned back to the menu, all she said was, "Do you suppose the trout is fresh?"

It was, and could not be from any place closer than the Pyrenees. And so was the Iranian caviar they began with; and the wines were chateau-bottled *graves*.

Alys ordered with the precision and arrogance of a well-practiced tourist. Calculating the cost of the meal in his head, Hake thanked his one-God-at-the-most that he was not going to have to pay for it.

He understood at least that reason why Yosper and the others so enjoyed their work. It was difficult to remember that thrift was a virtue when you didn't have to pay the bills—when, in fact, with their complicated juggling of computer programs and credit cards, each charge was paid unwittingly by an enemy, so that each extravagance was a blow struck against the foe.

Living like a millionaire was a new experience for Hake, and quite an immorally pleasant one. But it shriveled in contrast with the life style of Sheik Hassabou. Abu Magnah was not his personal possession; but it was, every inch of it, his family's. Their palaces were the dozen others scattered around the irrigated areas; but his was the largest, the principal, the one from which the power flowed. And what power! He had created a world, where nothing had been before but a silty, salty camel-wallow and a few dwarf trees.

The irrigation circles that gave Abu Magnah life could have been created at any time. But no one before Hassabou had been willing to pay the price. Under the scrub and rock was an ocean of fossil water—faintly brackish, yes; but cool, ample for irrigation, even drinkable if one were not fastidious. But it was nearly half a mile down. Every pint delivered to the surface represented 2000 foot-pounds of work. Power-piggery! And on a vaster scale than Hake had ever dreamed. The sheik had found the old oasis, and bought it, and tapped its underground sea to recreate in the Empty Quarter those Al Halwani courts and palaces he had played among as a child. All it took was energy. Energy took only money. Money enough to buy his own plutonium generator—soon to be replaced, Dicran had said, by the new solar tower going up north of the city—and pump the water up from the sea beneath the sands. Money to distill the water to drink, and to spread it in the irrigation circles around the desert, so that the great rotating radii of pipe could make the desert bloom. Money to track-truck in the marble and steel to build his palaces, to subsidize and house the Palestinians and Saudis and Bedouins who farmed his circles and staffed his city, to buy his own muezzins to call out the hours for prayer, and to build the towers they called from. Money to buy a woman he fancied and to bribe the police to look the other way when he abducted her here. One woman? Perhaps he had a hundred. Dicran's winks and leers were ample for a thousand.

And the money was there. For more than a generation all the

gold of the Western world had sluiced into the Near East to pay for oil. Oil became capital. Capital bought hotels and auto factories and publishing companies and thousands of square miles of land, some of it in building sites in New York and Chicago and Tokyo and London. Even when the oil was gone, the capital remained and replenished itself, and kept pouring money into their treasuries.

That was what Hake was challenging.

Against that, what forces could he muster?

There were some. The picklock and martial-arts skills he had learned Under the Wire. The codes and cards that would let him draw on the secret funds of half a dozen major industrial powers. His own determination.

The forces were not even, but for this limited objective, the rescuing of a single prisoner—maybe even enough. If he was general enough to know how to deploy them.

With all that money, could he not buy himself an ally or two? A corruptible cop? A Palestinian with relatives still stuck on the West Bank? Maybe even one of Hassabou's guards?

But how, exactly, did you go about that?

And there were only two days left.

They took their after-dinner coffee and brandy on the roof terrace, just outside the rotating turret. They were the only ones at the tables around the swimming pool, and the barman obviously thought they were crazy. The night wind was still hot. The sand made the surface of their table gritty however many times he wiped it away. But at least they could talk freely.

Alys was not in a mood to conspire. "You'll work it out, dear," she said, stretching languorously and gazing out toward the dark desert. "And, oh Horny! Doesn't this beat the hell out of Long Branch, New Jersey?"

Well, in a way it did. In some ways Hake was still very young, freshborn out of the wheelchair. But the darkness under the horizon's stars struck him as less glamorous than threatening.

Alys lifted her snifter to her lips and then jerked it away. "What's the matter?" Hake demanded.

She was laughing. "Parts of this place are like Long Branch," she announced. "There's a bug in my brandy."

Hake woke up with a flashlight shining in his eyes. A voice he had not expected to hear said, "Don't move, don't touch anything." A rough hand patted his body and explored under his pillow. The light circled around the bed and did the same for Alys, waking her

with a gasp. Then the light retreated. Hake could not see past it, but he remembered the voice.

"Hello, Reddi," he said. "Which one are you?"

The wall-bracket lights came on, revealing the slim, dark man with the small, dull gun pointing at them. "I am the one who is quite ready to kill you, Hake. I do not like having to follow you all over the world."

"Well," Hake said, "I really didn't want to put you to the trouble." He rubbed his eyes and sat up. Beside him Alys was awake but silent; she was watching the entertainment with great interest, waiting to see what would come of it.

The gun was in the Indian's right hand, and there was a scar over his eye: the twin was Rama Reddi. "How did you find me, Rama?" Hake asked conversationally.

The Indian said, "It was not hard to guess you would be coming to see Leota. Especially as you took her old school chum with you. I caught up with you in Cairo, and beat you here in a private jet; I was in the airport when you arrived."

"I didn't see you." Hake didn't expect an answer to that, and got what he expected. He rolled his feet over the side of the bed and said, "Do you mind if I get up and make myself some coffee before we continue with this? I have instant in the bathroom."

"Yes? And what else, Hake? I am more comfortable to keep you where you are."

Alys stirred. "Suppose a person has to tinkle? As I happen to do."

Rama Reddi studied her for a moment, then went to the bath. He peered inside, entered, rummaged among the pile of towels, opened the medicine chest. He did not leave the door, and the gun remained fixed on them. "All right, Miz Alys Brant," he said. "Keep in mind that this gun does not make any noise, and I have no especial reason not to kill you both, since Hake has chosen to cheat my brother and me on our agreement."

"Now, wait a minute," Hake said. "I haven't broken our agreement. If anybody has a right to be pissed off, it's me—why did you blow up my car?"

"Then our agreement is in force? You will work with us?"

Hake rubbed his chin. "Well— Will you help me get Leota out of the harem?"

"Certainly not. Have you not understood that my brother and I are not amateurs, or patriots? We have no client for this."

"I'll be your client. I'll give you information— for a starter, I'll tell you about the mission I'm on now. It's big. It involves at least

twenty Agency personnel—”

“In Al Halwani, yes, to sabotage the solar power installation,” Reddi nodded. He paused, watching Alys carefully as she came out of the bathroom. She was holding a glass of instant coffee for Hake, a towel wrapped around it to save her fingers from the heat. When Reddi was sure there were no surprises in the towel, he said, “I have no client for that either, Hake. It does not interest me.”

“I didn’t know you knew about that,” said Hake, dampened. “But it’s got to be pretty valuable. I have a map of it—I can get plans, even bring you with me, maybe. Surely you could sell the secrets to somebody.”

The Indian looked at him incredulously. “If I wished to do that, why would I go so far? And we still have no client.”

Alys said suddenly, “Horny offered to be your client.”

“Do not interrupt unless you can say something intelligent, Miz Brant. How would he pay?”

“He can get money out of the computer system. *Lots* of it. Can’t your Horny?”

“Sure I can, Reddi. I’ll give you a—a hundred thousand dollars!”

Reddi crossed to a chair by the bed and sat down, the gun now in his lap. “That at least is a new idea. Perhaps it is worth discussing.” He sat silently for a moment, then produced an envelope from his pocket and tossed it to Hake. “Here,” he said. “I will go this far for you now.”

The envelope contained three photographs of a woman in harem dress and face-veil. It was Leota!

Although the thing Hake most remembered about Leota was that she was a different woman every time he saw her, this was a new variety of different. She wore gold arm-bangles, tight vest and baggy, gauze pants, and she seemed to be wearing curiously patterned stockings beneath the pants. Two of the pictures showed her getting out of a huge old gasoline-burning Rolls-Royce, one of them in heated argument with a black, liveried driver who carried a dagger. The third— Hake studied it carefully. It showed Leota sitting at a table with another woman, and behind them was a familiar window opening on a rooftop view. “That’s right here in the hotel!” he cried.

Reddi nodded. “I, too found it amusing that she was here, while you were looking for her all over town. I took it this afternoon. She comes here sometimes for tea.”

“You mean she can get out?”

The Indian said, “Do not assume that means she is free, Hake.

There are bodyguards always. And the bracelet on her left arm is a radio. Because of it she can be traced at any time, and they listen to her conversations. However," he went on, "I permitted her to see me. She is therefore alert, in the event that I elect to assist you in this."

"The price is a hundred thousand dollars," said Hake.

"Oh, at least that," the Indian said, studying Hake. After a moment he said, "You are puzzling, Hake. You have become a great deal more sophisticated since Munich. You miss much that is obvious—for example, you must have seen the solar facility that Sheik Hassabou is constructing here as you flew in, but you did not recognize what you saw. But you are using Agency facilities for purposes of your own, and on no small scale, either. This implies to me that you have a means for breaking computer net security. I will have to talk to my brother but— Yes, *that* would be worth something to us, Hake."

Hake glanced at Alys, and picked his words carefully. "Supposing," he said, "That I could tell you where to find the code words and programs and help you, ah, steal them."

"You cannot give them to me yourself?"

"I don't have them. But Yosper and Curmudgeon do, and they'll be in Al Halwani."

Reddi rubbed his right hand along the barrel of his gun contemptively. "I think," he said, "that you are lying to me."

"No! Why would I do that? Talk it over with your brother, we can make a deal."

"Oh, I will talk to him, Hake. But now I want both of you to lie face-down on the bed."

The hairs at the back of Hake's neck prickled erect. "Listen, Reddi—"

"Now."

Hake set the coffee down and, unwilling, joined Alys on the bed. They heard Reddi move across the room. The light went off. The door opened and closed.

Alys sat up immediately. "Horny, what the hell are you doing, lying to that man? You trying to get us killed?"

Hake breathed hard for a moment, trying to accept the fact that they were both still alive. He said, "I'm trying to prevent it. Figure it out, Alys. Suppose I gave him the code words and cards and told him my thumbprint opens a channel. What do you suppose he'd do after he got them?"

"Why—if he'd made a bargain with us—"

Hake shook his head. "He wouldn't have anything more to gain. He'd take off with the cards and the codes—and my thumb."

"Horny! He wouldn't!"

"He would. Go to sleep, Alys. We're going to need our rest, because we're going to have to do this alone."

But he slept poorly. Twice he woke up to the sounds of distant sirens and what sounded like fire-engine hooters, and the second time thought he heard the patter of rain against their window. Rain! Of course not. It was still dark, and he forced himself to keep his eyes closed.

Until Alys whispered softly in his ear, "Horny? Horny. Wake up and tell me what's going on."

It was barely first light. She was pointing to the window, which seemed to be covered with great oily drops of blackness. The sirens were still going, and a distant *hee-haw* hooting that sounded like an air-raid alarm. He got up and approached the window.

The oily raindrops were not drops of water. They were insects. Hundreds of them, rattling against the window and dropping to the little ledge below. All the ornamental plantings on the window were covered with them, the flowers invisible under a hundred insect bodies apiece, the stems bending to the dirt beneath their weight. "Locusts," breathed Hake.

"How awful," said Alys, fascinated. "Are those the same ones we flew over?"

"I expect so." She was standing beside him, shivering with excitement. Looking out the window was like looking through one of those snowflake paperweights, except that the flakes were dark brownish-green. They drowned the desert view with their bodies. Hake could see the building across the street and, dimly, a minaret a few hundred yards away. Beyond that, nothing, only the millions and billions of insects.

Out in the hall the hotel's piped-music speakers were muttering in several languages. Hake opened the door. Alys listened and said, "It's French. Something about the main body of locusts being on the radar—two kilometers north, approaching at twenty kilometers an hour. But if this isn't the main body, what is it?"

"Don't ask me. We never had locusts on the kibbutz."

The speaker rattled, and began again. This time it was in English. "Gentleman and ladies, we call your attention to the swarm of locusts. They are in no way harmful or dangerous to our guests, but for your own comfort you will please wish to remain inside the hotel.



The main swarm is approximately one mile away, and will be here in some twenty to thirty minutes. We regret that there may be some interruptions in serving you this morning, due to the necessity of employing staff in protecting our premises against the insects."

"I bet there may," said Hake, staring out the window. Past the thousands dashing themselves against the window, through the dung-colored discoloration of the air, he could see turbulent activity in the streets below. Women were streaming out toward the farms, carrying nets, what looked like wicker fish traps and wire-screen cylinders, while hydro-trucks of men with heavy equipment were threading past them. Farther out, the sky was black. There appeared to be two layers of clouds, the rust of the swarm beneath, the red-lavender of sunrise on the wisps of cirrus higher up.

"Oh, Horny, let's go outside and see!"

Hake tore himself away. "We might as well, I suppose." They dressed quickly and took the elevator. The lobby was full of guests, milling around far earlier than most of them had intended to rise. By the time they reached the sidewalk the sun was above the horizon, but it was still twilight—a greeny-brown twilight that rustled and buzzed. The fountain outside the door was already crusted with a skin of drowning insects, and a porter was setting up an electric fan to blow clouds of them into a net sack. As they stepped off the curb, bugs crunched under their feet. Alys stared around, thrilled, oblivious of the insects that drove against her face and were caught in her hair. "How exciting!" she said. "Do you suppose they do this often?"

"If they did there wouldn't be any farms," Hake said. "And time's running out for us."

"Horny! You can't be thinking of going after Leota in *this*. We don't even know where she is."

From behind them, Rama Reddi said, "She is in the gardens at the palace."

Hake spun. "How do you know that?"

"Oh," said the Indian, "it is not only her jailers who can track her electronically. Do you want to talk or get on with the project?"

Hake hesitated. "Why did you change your mind?"

"I did not change my mind. It is the circumstances that have changed." Reddi waved an arm at the locusts. "There is much confusion because of this, and the odds become better. I don't promise. But I have a car; let's go see."

The air was filled with insects now. To supplement the dunged



and discolored sun the Land Rover's headlights were on, and their beams painted two shafts of insect bodies ahead of them. Reddi drove carefully through the hurrying farm workers, circling around trucks on the shoulder of the road; it was not far. They crossed a bridge over a rapidly flowing river, with what looked like a waterfall just below—no, not a waterfall; it was a hump in the river itself. And past the bridge, in a field that had once been barley and was now green-brown insects, shadowy figures were scattered by great fans. From what they wore Hake knew they were women; he could not have told in any other way, because what they wore was flowing robes and the headdress and scarf—the hatta w-'aqqal—that was meant to protect against desert sand and work as well against locusts. Across the road a line of men was moving away from them, beating at the plants and forcing the locusts into flight again. Hake could not see what purpose that served, until he saw that the insects in flight were being sucked through the fans into wire cages. It was not just the fans. Hake became aware of a pungent, cockroachy smell: pheromone attractants.

At the turning Reddi stopped the car and turned off the headlights.

"What's the matter? Why don't we go find Leota?"

The Indian said, "She is the third one in line back there. Did you not see her? But her little bracelet is still broadcasting, and my device located her." He stared around, scowling. "However," he said, "there are problems."

"What sort of problems?" Hake demanded.

"You see them!" He gestured at the men across the road. "They have radios too. And it is probable the sheik himself is wandering about. He enjoys adventure— Hell!" He stared in the rearview mirror, then jumped out of the car and held up a warning hand.

One of the women was walking toward them. At Reddi's signal, she stopped. It was impossible to make out her face, but Hake had no doubt who she was.

"She saw us pass," said Reddi. "But it is too dangerous. We will— We will go on and try again, later."

"The hell you say! This is the best chance we'll ever have, Reddi!"

"It is no chance at all. If there were no men near— But there are, and the guards are always monitoring. We cannot even speak to her, or they will hear."

"We can just take the radio off her—"

"And do what? They are all around. If they look to where she is supposed to be and see no one, what will they do, Hake? Say, 'Oh, perhaps my vision is blurred, I must be mistaken?' No. They will

investigate. Then they will search, and if they search they will find us. And if we take her in the car, even if we do not speak, they will hear the sound of the car over the radio, and will locate her with the direction-finders. No. It is impossible. A little later—"

"I don't believe you'll do it later," Hake said. Alys put her hand on his arm.

"Mr. Reddi? Why can't I take her place?"

"What?" Hake cried. "Don't be insane! You don't know what you're saying."

She leaned to kiss his cheek. "Dear Horny," she said, "Leota is my friend, too. And anyway—it does sound interesting. And when you come right down to it, men always liked me better than Leota, back in college; and I don't think Sheik Hassabou will mind too much."

She jumped out of the car. The Indian glanced once at Hake, then followed. Hake started after them, then stopped himself; it was out of his hands; if he said anything, it would be heard and they would all be caught. He squinted through the blur of locusts as Reddi produced wire cutters and expertly snipped the golden arm-bracelet. It was soft, easy to remove, easy to bend onto Alys's willing arm.

Almost at once a voice came from it. "What is happening, Leota?"

"Nothing," said Leota, chin on Alys's shoulder. "I just tripped and bumped into something." She hesitated. "I'm getting tired of being out here," she complained. "I'm going back to my room to sleep for a while, if His Excellency doesn't require me."

The voice laughed. "His Excellency will surely wake you up if he does."

Alys touched the bracelet, then smiled at them. She formed with her lips the words, *Get out of here!* As she turned to move slowly toward the distant loom of the palace. Hake stared after her as they turned and retraced their path, until Reddi snapped, "Eyes front! Don't attract attention! That's the sheik." They were crossing the bridge; and down the stream, on the permanent hump of water, someone was standing on the surfboard, moving back and forth across the standing wave. He did not look toward them, and in a moment the locusts hid him from view.

*The conclusion of Hake's adventures will appear in the next issue of this magazine.*

## "Poetry, Fun, & Games" Contest Results!

*The results of our recent (July 1979) contest, which invited readers to submit an acrostic sonnet, will appear in the February 1980 issue. Please don't write, call, telegraph, or send carrier pigeons in an attempt to find out the results before that time. It won't work!*

—Shawna McCarthy

Dear Sirs,

You've finally done it. The July issue was (relatively) bad enough to force me to write a letter. Piece by piece: The cover was above average, and one of your best in a long time. The July-August '78 remains my favorite, though. The Good Doctor's editorial was one of his worst, but that's not too bad. One thing about "On Books": I think there should be a column "On Movies" in *IA'sfm*. Craig Miller's column in the other magazine is great but that mag only comes out four times a year.

The winner for the low point of the issue goes to Barry B. Longyear's latest in a dull series of circus stories, "Priest of the Baraboo." Maybe you could start another magazine solely for fans of the Momus stories called "Isaac Asimov's Momus Magazine" or *IA'mm*.

John M. Ford's article on gaming was good, considering I'm not a gamer.

"...And Settle Down with a Good Book" was just an average story which was good as I read it but has quickly slipped into the forgettable category. "The Initiation" was also poor, with a "surprise" ending which was hardly surprising.

"On Cosmology" might be good, but I won't know until I take physics. The two next stories were the highlights of the issue, but the pun between was too bad to be even considered good.

"On the Shadow of a Phosphor Sheen" would have been better if put into an issue that didn't have the article on gaming earlier in the magazine, even though this was about gaming in the future. The article and story are just too similar.

All in all, this issue shows that possibly the monthly format is not good for the magazine. We're getting quantity; we don't like to lose quality. But I'll still read the next one.

Thanks for reading this,

Rande Beidel  
Coatesville PA

*Come, come, if you're going to pick on my editorials, that's going too far.*

—Isaac Asimov

Mr. Scithers,

I am fifteen years old and have been a science fiction fan ever since I can remember. My mother picked up a copy of your May '79 issue for me and I loved it! I particularly enjoyed "L'Envoi," by John M. Ford, "Mermaid's Knell," by Anne Lear, and "The Dead of Winter," by Kevin O'Donnell, Jr.

I have been attempting to write science fiction for about two years now, although the only place it has been published is the school newspaper. Could you please send me a list of editorial requirements for story submissions? I don't know if my stories are good enough to be accepted, but it is worth a try.

Thanks,

Karry Koon  
State College PA

(I'd advise you to keep this signature; someday, when and if I'm a famous writer, it might be valuable.)

*That's what I said about my signature when I was 15 and everyone laughed. That's why we are placing your signature in the Davis vaults for future sale at an enormous price.*

—Isaac Asimov

George Scithers & Isaac Asimov:

It was a good twenty minutes after finishing "The Napoli Express" before I realized that it was not only an Agatha Christie takeoff, but a Father Brown spoof as well (Father Armand Brun, indeed!). Is Garrett by any chance contemplating a pastiche on Dorothy Sayers in the near future?

I must remember to re-subscribe to *IA'sfm* next payday; my husband let our previous sub. lapse some time back.

Margaret Middleton  
Little Rock AK

*Talk to your husband severely. Don't mince words.*

—Isaac Asimov

Dear Mr. Scithers,

The new issue—August 1979 (whole no. 18)—came in Friday's mail and it has been a pure joy to read.

The cover by Alex Schomburg was good, as was Dr. Asimov's editorial (including "the fair Ilanadee" and "the planet Xyubu").

"Dreams" by Barry B. Longyear was radically separated from the Momus stories—the first time I read "Dreams" I didn't like it, but after re-reading it, it turned out to be great stuff. Mr. Longyear has grown as a writer.

"Alex Schomburg" by Shawna McCarthy was good. The author has a talent for dealing with information and writing it. I would like to see Shawna McCarthy write-up Brian Froud.

"Itch On the Bull Run" by Sharon Webb—the only one I know that writes risqué stories that aren't risqué. I love 'em, and keep them coming.

"The Cool War" by Frederik Pohl. The best; the Master of Masters. It was worth missing the letters column (just this once, though) to read "The Cool War."

Number 18 was good. More issues like this will surely bring in another well-deserved Hugo.

Yours truly,

Joseph E. May, Jr.  
Sanford FL

*Shawna is our Associate Editor: beautiful, young, bright, and multi-talented. George picked her, but if I had had the chance, I would have, too.*

—Isaac Asimov

Dear Mr. Scithers,

Could your readers help us rediscover some Martian (or speculative) canal SF? We are looking for intelligent speculation on canal exotechnology, or at least some good canal action, as in Keith Roberts' two canal stories, Heinlein's *Red Planet*, Bradbury's "The Lost City of Mars," and Carl Jacobi's "Canal." We hope that there are even better, more detailed stories still to be found, perhaps enough for a collection. We would also like to urge writers to try their own speculation on canal technology and canal life on other worlds; we may have lost the Martain canals but there should be some 10<sup>8</sup> other worlds in our galaxy with canals to write about! For more details see "The Martian Canals" in the February 1979 issue of *American*

*Canals*, \$2 from the American Canal Society, 1932 Cinco Robles Drive, Duarte CA 91010. I would be glad to reward the first person who tells me of another good canal story, with a free copy of the article!

Sincerely yours,

William E. Trout, III  
Vice President  
American Canal Society

*I mentioned the canals in some of my early stories, but they weren't central to the plot.*

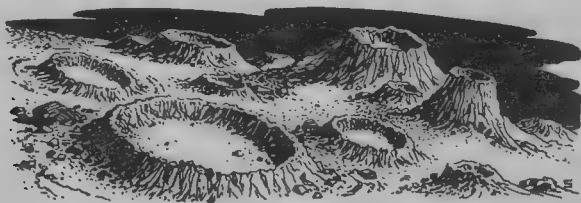
—Isaac Asimov

*Letters to the Editor should be addressed to the magazine at Box 13116, Philadelphia PA 19101. (The address for subscription matters is entirely different: Box 7350, Greenwich, CT 06830. Other matters concerning the magazine, such as advertising, newsstand circulation, and the like should be sent to the department concerned at Davis Publications, Inc., 380 Lexington Ave., New York NY 10017.)*

*Editorial matters—including requests for our editorial needs and manuscript format—should be sent to the magazine at the Philadelphia address, as above.*

*Want to help run a science fiction magazine? Then write us and tell us what we're doing right, what we're doing wrong, what we should be doing that we're not, and what we're omitting that we should include.*

*Help with distributing the magazine is, if anything, even more important: let us know how well the magazine is being displayed on newsstands in your area.*





# Classified

# MARKET

ISAAC ASIMOV—is published monthly. The rate per word for CLASSIFIED ADVERTISEMENTS is \$1.00—payable in advance—minimum ad \$15.00. Capitalized words 40¢ per word additional.

## ADDITIONAL INCOME

BECOME COMMISSION MAILER. How? Write: Grahams, DPBX 99371, Tacoma, WA 98499.

## AUTOMOBILES & MIDGET CARS

NEW Car Free Yearly! Details! Supercar, Box 28101, St. Louis, MO 63119.

## BLUEPRINTS, PATTERNS & PLANS

NEW CRAFT PRINT CATALOG—Choose from over 100 great easy-to-build plans. Send \$1.25 (completely refunded with your first order). BOAT BUILDER, (CP Div.)—380 Lexington Ave., New York, NY 10017.

## BOOKS & PERIODICALS

SF, New/used, British/American/Canadian. Free catalogs, Grant Thiessen, Box A-86, Neche, ND 58265.

FREE Catalog listing 14,000 good used mysteries, SF, other novels. Chadde, 45MH, Grand Marais, MN 55604.

MYSTERY Books for Sale. Send two stamps to Spawn of the Gryphon, 3006 Rimrock Rd., Billings, Montana 59102.

SCIENCE FICTION. Used paperback and hardback. 1,400 titles. Send want list. Benson's Books, 414 Wisconsin, NE, Albuquerque, New Mexico 87108.

## BUSINESS OPPORTUNITIES

100% PROFIT Bronzing Baby Shoes. Free Literature. NBC, Box 1904-DG, Sebring, FL 33870.

\$350 Weekly Mailing Letters. Free Details. Bronxville House, Box 311-D, Bronxville, NY 10708.

STAY HOME! EARN BIG MONEY addressing envelopes. Genuine offer 10¢. Lindco, 3636-DA, Peterson, Chicago 60659.

MAKE \$1.00 Each Addressing Envelopes. We pay postage. No Limit. Beginners Kit \$2.00. Colossi, Box 318-D, Brooklyn, NY 11204.

\$534.00 WEEKLY working three hours daily at home. \$356.00 weekly working two hours daily. \$178.00 weekly working one hour. Start immediately. Paid daily (advance)—\$106.80, \$71.20 or \$35.60. WRITTEN EARNINGS GUARANTEE. FREE Bulletin/Application. FAS, Postal Unit 13703-G, San Antonio, Texas 78213.

## BUSINESS OPPORTUNITIES—Cont'd

MAILORDER opportunity! Start profitable home business without experience or capital. Write for free book and details. No obligation. Gil Turk, Dept. 74, Montvale, NJ 07645.

\$500.00 weekly mailing circulars! New guaranteed program! Free proof: McMAHON, Box 909-D, Niagara Falls, NY 14303.

\$480 Weekly Possible. Amazing New Mailing Program. Details, Rasmussen DP129, 1747N, 450E., Ogden, Utah 84404.

FANTASTIC PROFITS Mailing Circulars. Write: McGuire, Box 91054-D, Tacoma, WA 98491.

\$58.90 DAILY PAY. \$353.88 WEEKLY. HOMEWORK. IMMEDIATE INCOME. EARNINGS GUARANTEE CERTIFICATE. FREE REPORT/APPLICATION. AAHIP, UNIT 29309-H, MEDCENSTA, TEXAS 78229.

ENGRAVED Signs, Nameplates. Pins, Wholesale Catalog. Send \$1.50 (REFUNDED 1st order). 31 colors. Mortimer's, 4118 East Drive, Wonder Lake, IL 60097.

\$650 weekly CASH. Beat inflation! Advance available. Guaranteed earnings. Dept. H, Box 1489, Spring, Texas 77373.

CANADIANS—Jewelry Available Wholesale. Free Catalog and More. Northway Distributors, RR 3, St. Charles, Ontario P0M 2W0.

\$2000.00 Monthly mailing commission circulars. Experience unnecessary. Free details. American 1108 Colonial, Inkster, Michigan 48141.

CASH ADVANCE \$500/Thousand envelopes stuffed available. No Limit! Information: Rexson 36-02, Box 1060, Orangepark, FL 32073.

FREE Details. Excellent Home Mailing Offer. Robinson, Box 415, New Hartford, New York 13413.

STUFF ENVELOPES \$75.00 HUNDRED. Clip news items \$2.00 to \$10.00 each. Details, send \$1.00, stamped addressed envelope, Grier Enterprises, Box 332, St. Albans, N.Y. 11412.

\$2,000 Monthly Mailing Circulars. Sase: Enlighten, Box 4069, Hilo, HI 96720.

## EDUCATION & INSTRUCTION

UNIVERSITY DEGREES BY MAIL! Bachelors, Masters, Ph.D.s . . . Free revealing details. Counseling, Box 389-IA-12, Tustin, CA 92680.

# PLACE

# Classified

To be included in the next issue, please send order and remittance to R. S. Wayner, Classified Ad Manager, DAVIS PUBLICATIONS, INC., 380 Lexington Ave., New York, N.Y. 10017.

## EDUCATION & INSTRUCTION — Cont'd

**COLLEGE DEGREES** for Life & Work Experiences. Bachelors, Masters, Doctoral Programs. Free information, write American International University, 150 South Los Robles, Dept. AU-11, Pasadena, CA 91101. Call toll-free 1-800-423-4166.

GET advice on how to economize in modernizing or improving or adding space from idea to completion for your home. Working blueprints available. Send \$1.50 for 110 Better Building Plans to: Davis Publications, Inc., 380 Lexington Ave., New York, N.Y. 10017.

**COLLEGE Degrees By Mail!!!** Bachelor's, Master's, Doctorates. Free Information. Careers, Department IASFA, Box 10068, Washington, DC 20018.

**UNIVERSITY Degrees** by mail, Accredited. Write: Education, 256-D South Robertson, Beverly Hills, CA 90211.

**GOLD!** Free manuscript/How to buy/How to sell/SASE Systems Communication Corp. P.O. Box 20380A Newark, New Jersey 07101.

**HOW To Save Money Selling Your Home**, \$3.95. Allakian, P.O. Box 1713, Albany, GA 31702.

**HOW TO TAKE TESTS**. Guaranteed Methods raise scores. \$3.00. JFB Enterprises, Box 1289, Kailua, Hawaii 96734.

**DO YOU KNOW** "How to Write a Classified Ad That Pulls"? Booklet plus a \$2.00 certificate toward a classified ad in any of our publications tells how. Send \$1.75 (includes postage) to R. S. Wayner, Davis Publications, Inc., 380 Lexington Ave., New York, N.Y. 10017.

## FORMULAS & TRADE SECRETS

**FINALLY! FORMULA for FINANCIAL INDEPENDENCE** that WORKS or your money refunded. Send \$15.00 to R-G ENTERPRISES, INC., BOX 581, BLOOMINGTON, ILLINOIS 61701.

## GIFTS THAT PLEASE

**FREE GIFT catalog!** UNIQUE gifts from around the world. Gifts, Box 11588-IA, Spokane, WA 99211.

**NUTTIES** unique gift for those nutty occasions. Desk plaques \$3.00 each, 24 sayings, assorted nuts. Free brochure. Sweetwater Company, Box 439, Jeffrey City, WY 82310.

**FREE 79-80 gift catalog**, Dp Dorcee, Box 8829, New Fairfield, CT 06810.

## GOVERNMENT SURPLUS

**JEEPS — \$59.30! CARS — \$33.50! 450,000 ITEMS! GOVERNMENT SURPLUS. MOST COMPREHENSIVE DIRECTORY AVAILABLE TELLS HOW. WHERE TO BUY—YOUR AREA—\$2.00. MONEY BACK GUARANTEE.** Government Information Services, Box 99249-E12, San Francisco, CA 94109.

## HYPNOTISM

**FREE Fascinating Hypnosis Information!** Startling! DLMH, Box 487, Anaheim, CA 92805.

## INVENTIONS WANTED

**INVENTIONS**, patents, wanted cash, royalty. Auto, electro-mechanical, mechanical devices, Housewares, etc. We develop, finance, manufacture and market from an idea to perfected product. Free evaluation and brochure. Request Kit DP, Pixonic Corporation, 250 West 57th Street, New York, New York 10019.

## LOANS BY MAIL

**BORROW \$25,000 'OVERNIGHT.'** Any purpose. Keep indefinitely! Free Report! Success Research, Box 292263-SZ, Indianapolis, IN 46229.

**GET cash grants—from Government.** (Never repay.) Also, cash loans available. All ages eligible. Complete information, \$2 (refundable). Surplus Funds-DG, 1629 K. St. NW, #502, Washington, D.C. 20009.

**BORROW \$1,000-\$50,000 secretly—"overnight."** Anyone! Credit unimportant. Repay anytime. Incredibly low interest. No interviews, collateral, cosigners. Unique "Financier's Plan." Full information, \$2 (refundable). Spectrum, 79 Wall St.-16, New York 10005.

**LOANS! \$2,000-\$5,000,000.** Advise amount-purpose. Write: National Advertising Agency, 507-DG Fifth Ave., New York 10017.

## MEMORY IMPROVEMENT

**INSTANT MEMORY...NEW WAY TO REMEMBER.** No memorization. Release your PHOTOGRAPHIC memory. Stop forgetting! FREE information. Institute of Advanced Thinking, 845DP ViaLapaz, Pacific Palisades, CA 90272.

## MISCELLANEOUS

**LOTTERY OF LOTTERIES! Tax Free.** Application \$2.00: Capitol Enterprises, P.O. Box 774, 'D,' Appleton, WI 54912.

# Classified Continued

## MISCELLANEOUS—Cont'd

SAVE TO 90% WEEKLY on groceries!! Guaranteed!! Information: Rush self-addressed stamped envelope plus 25¢! Martens Ent., 1046 Greenwood Ct., Rm7DPG, Oshkosh, WI 54901.

MY opinionated tips you should know about buying new or used cars and maintenance of them. Send \$2.98 to Tips, 1917 Grant, Vancouver, WA 98660. Washington state residents add local tax.

FREE Information about CANADA'S FABULOUS LOTTERIES. Joe Davis, BI-2590 Granville, Vancouver, Canada V6H 3H1.

TURN your living room into a greenhouse. Increase all plant production 91%. Free report. Write Jan, Box 362, Durant, OK 74701.

## MONEYMAKING OPPORTUNITIES

\$300 WEEKLY SPARE TIME — Mailing Salesletters. Details, Thomas, Dept.-D, Box 11773, Charlotte, NC 28220.

MAKE YOUR CLASSIFIED AD PAY. Get "How to Write A Classified Ad That Pulls." Includes certificate worth \$2.00 towards a classified ad in this publication. Send \$1.50 (plus 25¢ postage) to R. S. Wayner, Davis Publications, Inc., Dept. CL, 380 Lexington Ave., New York, NY 10017.

EASY HOMEWORK PLAN. Stuff circulars. Big \$\$\$ Write: A&I, 5343-A Diamond Hts., San Francisco, CA 94131.

STUFF-MAIL ENVELOPES!! \$250.00 Profit per thousand possible! Offer-details Rush stamped addressed envelope: Worldwide-A 460, X15940, Fort Lauderdale, FL 33318.

EARN \$1,700 Weekly. Start Immediately, Free Details. Day, Box 89-IE, Licking, MO 65542.

\$1,000 Monthly Possible Mailing Commission Circulars. Send self-addressed stamped envelope to Edna-Loy Associates, P.O. Box 8034A, Cincinnati, Ohio 45208.

✓-\$250 1000 Stuffing Envelopes. Guaranteed Earnings. For details send 25¢ and stamped addressed envelope to: AAA, P.O. Box 648, Lake Forest, IL 60045.

MONEY Opportunities. World Wide. Box 6956 Birmingham, AL 35210.

WIN fabulous prizes entering the greatest million dollar sweepstakes ever! Free details: Con- tests, Box 7469-DVB, Philadelphia, PA 19101.

\$500 WEEKLY CASH ADVANCE possible! Exciting, easy, mailing service. Free details: Dept. C, box 79789, Houston, TX 77024.

## MONEYMAKING OPPORTUNITIES—Cont'd

WOULD Like to Share Over 400 Spare and Full Time Money Making Ideas with You. Send \$4.00 to CHEROKEE MAILORDER SERVICE, R #1, Box 435, Blacksburg, SC 29702.

HUNDREDS WEEKLY Mailing Letters. FREE Details, Karmchell, 628F-6 Cherry, Albany, GA 31705.

## OLD GOLD WANTED

TOP DOLLARS FOR OLD GOLD RINGS—Diamonds-Silver-Dental Gold. The Northwest Refinery, Box 230196, Tigard, Oregon 97223.

## PEN PALS

FREE service ages 16 and above. For information: Friends Worldwide, CP-95/F Anjou, Montreal, Canada H1K 4G2.

## PERSONAL

UNIVERSITY DEGREES BY MAIL! Bachelors, Masters, Ph.D.s . . . Free revealing details. Counseling, Box 389-DP12, Tustin, CA 92680.

## PHOTOGRAPHY—PHOTO FINISHING & SUPPLIES

SAVE HUNDREDS OF DOLLARS!!! Make your own S & M Densitometer. Send \$3.00 for detailed drawings and instructions. A must for successful photography in your darkroom. Order direct: S & M Instruments, Dept. IA12, 380 Lexington Ave., N.Y., NY 10017.

## PRINTING, MIMEOGRAPHING & MULTIGRAPHING

1000 THERMOGRAPHED BUSINESS CARDS \$8.50 (POSTPAID). Free Samples, Agents Welcome. MONA, Suite 501-1ASF12, 79 Wall Street, New York, NY 10005.

## RECORDS & SOUND EQUIPMENT

FREE Promotional albums, concert tickets, stereos, etc. Information: Barry Publications, 477 82nd Street, Brooklyn, New York 11209.

## START YOUR OWN BUSINESS

117 services anyone can sell by mail. Details 25¢. Emjay Sales, 224 N. Fig, Escondido, CA 92025.

## TIPS FOR THE HOME, ETC.


FOR anyone who wants the satisfaction and economy of repairing, furnishing and maintaining the furniture in his home. Send \$1.50 (includes postage) to FURNITURE, 380 Lexington Ave., New York, NY 10017.

# *A Superb Collection*

*of great stories from Isaac Asimov's  
Science Fiction Magazine!*

288 pages!

## **ISAAC ASIMOV'S** **SCIENCE FICTION ANTHOLOGY**

FALL-WINTER 1979  02/85

VOLUME 2 \$2.25

# 16

stories by:

Isaac  
Asimov  
Randall  
Garrett  
Martin  
Gardner  
Barry B.  
Longyear  
Jo  
Clayton  
F. Paul  
Wilson  
and others



From the masters  
of science fiction,  
16 entertaining  
stories by Isaac  
Asimov himself,  
Randall Garrett,  
Jo Clayton, Barry  
B. Longyear,  
John M. Ford,  
Grendel Briarton,  
F. Paul Wilson,  
and many more.

To order, please  
use coupon on  
Pages 82 or 98

# THE TOTAL SF EXPERIENCE

**TAKE  
ANY 4  
FOR 10¢  
WHEN YOU JOIN**



7286 **Jem.** By Frederik Pohl. Brilliant new novel of intrigue and violence on an alien planet. By the author of *Gateway*. Explicit scenes and language may be offensive to some. Pub. ed. \$10.00

6536 **The Best Science Fiction of the Year #8.** Terry Carr, ed. A dozen stories from the past year by Varley, Ellison, Vinge, other favorites. Special edition.

2543 **The Dragonriders of Pern.** By Anne McCaffrey. A mammoth volume containing all three novels: *Dragonflight*, *Dragonquest* and *The White Dragon*. Comb. pub. ed. \$26.85

6197 **Riddle of Stars.** By Patricia A. McKillip. In one volume, all three novels of the epic fantasy: *The Riddle-Master of Hed*, *Heir of Sea and Fire*, and *Harpist in the Wind*. Comb. pub. ed. \$24.85

4697 **The Fountains of Paradise.** By Arthur C. Clarke. Important new novel by one of the superstars of science fiction. Pub. ed. \$10.00

7138 **Kinsmen.** By Ben Bova. The story of mankind's move into space, and of the astronaut ultimately responsible. Pub. ed. \$9.95

8532 **The Hugo Winners, Vol. I & II.** Giant 2-in-1 volume of 23 award-winning stories, 1955 to 1970. Asimov introduces each. Pub. ed. \$15.45

7831 **Galactic Empires.** Brian Aldiss, ed. Two-volume anthology of 26 stories by famous authors Clarke, Asimov and others covers the Rise and Fall of Galactic Empires. Comb. pub. ed. \$17.90

6221 **The Foundation Trilogy.** By Isaac Asimov. The ends of the galaxy revert to barbarism. An SF classic. Comb. pub. ed. \$20.85

0075 **The Chronicles of Amber.** By Roger Zelazny. Two glorious volumes contain: *Nine Princes in Amber*; *The Guns of Avalon*; *Sign of the Unicorn*; *The Hand of Oberon*; *The Courts of Chaos*. Comb. pub. ed. \$30.30

7187 **The Faded Sun: Kutath.** By C. J. Cherryh. The last battle for survival by a nonhuman warrior race. Special ed.

7278 **Masters of Everon.** By Gordon R. Dickson. Mystery on another planet — and native animals hold the key. By the author of *Time Storm*. Special ed.

**EXCLUSIVE  
RECORD  
AVAILABLE  
TO MEMBERS  
ONLY**

**Great  
SF Film Music**  
from such movies as *Fahrenheit 451*—yours in rich stereo sound for only \$2.95! (A \$4.95 value)

## HOW THE BOOK CLUB WORKS.

**Savings start when you join.** Once your application for membership is accepted, you'll receive your choice of any 4 books on this page for only 10¢ (plus shipping and handling). If not delighted, return them within 10 days. Membership will be cancelled and you'll owe nothing.

**You get 2 Selections every month at up to 65% off publishers' prices.** About every 4 weeks (14 times a year), we'll send you the Club's bulletin, *Things to Come*, describing the 2 coming Selections and a variety of Alternate choices. If you want both Selections, you need do nothing; they'll be shipped automatically. If you don't want a Selection, or prefer an Alternate, or no book at all, just fill out the convenient form always provided, and return it by the date specified. We allow you at least 10 days for making your decision. If you don't receive the form in time to respond within 10 days and receive an unwanted Selection, you may return it at our expense.

**After joining, you need take only 4 Selections or Alternates during the coming year.** You may resign any time thereafter, or remain a member as long as you wish. One of the two Selections each month is only \$2.49. Other Selections are slightly higher but always much less than hardcover Publishers' Editions. A shipping and handling charge is added to each shipment. Send no money. But do send the coupon today!

## THE SCIENCE FICTION BOOK CLUB

Dept. WR027, Garden City, N.Y. 11530

Please accept me as a member. Send me the 4 books I numbered in the boxes below and bill me just 10¢ (plus shipping and handling). I agree to the described Club Plan, will take 4 more books at regular low Club prices during the coming year, and may resign any time thereafter. SFBC books are selections for mature readers.

☐ Also, please send me Great Science Fiction Film Music and bill me just \$2.95 plus shipping and handling.

1	Mr./Ms.	Apt. #	State	Zip	
2					
3					
4					
	Address				
	City				

Order not valid without signature. If under 18, parent must sign.

Signature: \_\_\_\_\_

The Science Fiction Book Club offers its own complete hardbound editions sometimes altered in size to fit special presses and save members even more. Members accepted in U.S.A. and Canada only. Canadian members will be serviced from Toronto. Offer slightly different in Canada.

51-S154



STIMULATE YOUR MIND  
EXCITE YOUR IMAGINATION  
EXPLORE THE FUTURE



SCIENCE FICTION  
**analog**  
SCIENCE FACT

ONE YEAR: \$10.00  
TWO YEARS: \$18.00  
THREE YEARS: \$25.00

Substantial savings compared  
to the newsstand price  
of \$1.25 per copy.

DETACH  
ALONG PERFORATION  
AND MAIL THIS PORTION  
TODAY WITH YOUR  
PAYMENT TO:

SCIENCE FICTION  
**analog**  
SCIENCE FACT

BOX 5205  
BOULDER, COLORADO  
80322





**Science Fiction** by the masters of the medium—firmly established, making their mark, beginning

**Science Fact interviews** with and reports by the innovators, creators and theorists shaping the future

**Biographical Close-Ups** of the writers, illustrators and scientists who see our future changing

## EXPLORE THE CHANGING FUTURE TODAY

have pocket-size **analog** mailed directly to you every month

# 12 issues for just \$10

*(Saving you \$5 under the newsstand price of \$1.25 per copy!)*

ORDER HERE ▲ DETACH THIS PORTION AND RETURN  
IT WITH YOUR PAYMENT

**ANALOG ■ BOX 5205 ■ BOULDER, COLORADO 80322**

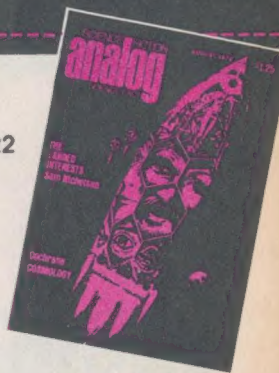
*Please enter my subscription to ANALOG:*

☐ **One full year, only \$10.00**

**...SAVE EVEN MORE!**

☐ **2 years (\$18)** ☐ **3 years (\$25)**

☐ **new subscription** ☐ **renewal**



Name \_\_\_\_\_ (please print)

Address \_\_\_\_\_ Apt. No. \_\_\_\_\_

City \_\_\_\_\_

State \_\_\_\_\_ Zip \_\_\_\_\_

**My check (payable to Analog)**

for \$ \_\_\_\_\_ is enclosed.

This rate applies only to the U.S.A. and its Possessions. For Canada and Mexico, add \$2 per year for extra postage.

Your first ANALOG will be mailed to you within 8 weeks after receipt of your order.